

Report 11428
March 1999

GENCORP
AEROJET

**Integrated Advanced Microwave Sounding Unit-A
(AMSU-A)**

Performance Verification Report

Final Comprehensive Performance Test Report

P/N 1331720-2-TST, S/N 105/A1

**Contract No. NAS 5-32314
CDRL 208**

Submitted to:

**National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771**

Submitted by:

**Aerojet
1100 West Hollyvale Street
Azusa, California 91702**

Aerojet



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TEST DATA SHEET 1 (Sheet 1 of 9)
Grounding System Test (Paragraph 3.2.4.1)

J1 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-1	+28 V MLB	> 100k	> 100k	P
J1-2	+28 V MLB	> 100k	↑	↑
J1-3	+28 V MLB RTN	> 100k		
J1-4	+28 V MLB RTN	> 100k		
J1-5	+28 V PLB	> 100k		
J1-6	+28 V PLB	> 100k		
J1-7	+28 V PLB RTN	> 100k		
J1-8	+28 V PLB RTN	> 100k		
J1-9	+28 V TMB	> 100k		
J1-10	28 V TMB RTN	> 100k		
J1-11	NO CONNECTION	> 100k	↓	
J1-12	NO CONNECTION	> 100k	> 100k	
J1-13	CHASSIS GROUND (E1)	< 1	< 1	
J1-14	+28 V MLB	> 100k	> 100k	
J1-15	+28 V MLB	> 100k	↑	
J1-16	+28 V MLB RTN	> 100k		
J1-17	+28 V MLB RTN	> 100k		
J1-18	+28 V PLB	> 100k		
J1-19	+28 V PLB	> 100k		
J1-20	+28 V PLB RTN	> 100k		
J1-21	+28 V PLB RTN	> 100k		
J1-22	+28 V TMB	> 100k		
J1-23	28 V TMB RTN	> 100k		
J1-24	SAFETY HTR PWR	> 100k	↓	↓
J1-25	SAFETY HTR RTN	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 2 of 9)
Grounding Interface Test (Paragraph 3.2.4.1)

J2 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J2-1	Chassis Ground (E2)	< 1	< 1	P
J2-2	DATA CLOCK (C1)	> 100k	> 100k	P
J2-3	Signal Return	> 100k	↑	↑
J2-4	No Connection	> 100k		
J2-5	DIGITAL-A DATA OUT	> 100k		
J2-6	DATA ENABLE (A1)	> 100k		
J2-7	8 SEC SYNC PULSE	> 100k		
J2-8	No Connection	> 100k	↓	↓
J2-9	No Connection	> 100k	> 100k	P

J3 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J3-1	1.248 MHz CLK	> 100k	> 100k	P
J3-2	1.248 MHz CLK RTN	> 100k	> 100k	P
J3-3	Chassis GND (E3)	< 1	< 1	P

J5 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J5-1	Chassis Ground (E5)	< 1	< 1	P
J5-2	MODULE PWR IND	> 100k	> 100k	P
J5-3	COLD CAL POS MSB (OUT)	> 100k	↑	↑
J5-4	No Connection	> 100k		
J5-5	SCANNER A1-2 ON/OFF	> 100k		
J5-6	ANT IN COLD CAL POS	> 100k		
J5-7	PLL PRI/RED	> 100k		
J5-8	No Connection	> 100k		
J5-9	SURV HTR ON/OFF	> 100k		
J5-10	No Connection	> 100k		
J5-11	COLD CAL POS LSB (OUT)	> 100k		
J5-12	SCANNER A1-1 ON/OFF	> 100k		
J5-13	ANT IN WARM CAL POS	> 100k		
J5-14	ANT IN NADIR POS	> 100k	↓	↓
J5-15	FULL SCAN MODE	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 3 of 9)
Grounding System Test (Paragraph 3.2.4.1)

J4 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J4-1	Chassis Ground (E4)	< 1	< 1	P
J4-2	MODULE PWR DISCONN	> 100k	> 100K	P
J4-3	SURVIVAL HTR ON	> 100k	↑	↑
J4-4	MODULE TOTALLY OFF	> 100k		
J4-5	SCANNER A1-2 ON/OFF	> 100k		
J4-6	ANT AT COLD CAL POS	> 100k		
J4-7	PLL SELECT	> 100k		
J4-8	ANT AT NADIR POS	> 100k		
J4-9	COLD CAL POS MSB (IN)	> 100k		
J4-10	No Connection	> 100k		
J4-11	No Connection	> 100k		
J4-12	+10 V INTERFACE BUS	> 100k		
J4-13	10 V INTERFACE BUS RTN	> 100k		
J4-14	MODULE PWR CONN	> 100k		
J4-15	SURVIVAL HTR OFF	> 100k		
J4-16	SCANNER A1-1 ON/OFF	> 100k		
J4-17	ANT AT WARM CAL POS	> 100k		
J4-18	FULL SCAN	> 100k		
J4-19	COLD CAL POS LSB (IN)	> 100k		
J4-20	No Connection	> 100k		
J4-21	No Connection	> 100k		
J4-22	No Connection	> 100k		
J4-23	No Connection	> 100k		
J4-24	+10 V INTERFACE BUS	> 100k	✓	N
J4-25	10 V INTERFACE BUS RTN	> 100k	> 100k	P

10 Mar 99

TEST DATA SHEET 1 (Sheet 4 of 9)
Grounding System Test (Paragraph 3.2.4.1)

J6 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J6-1	Chassis GND (E6)	< 1	< 1	P
J6-2	RF SHELF A1-1 TEMP	> 100k	↑	↑
J6-3	A1-1 SCAN. MTR. TEMP	> 100k		
J6-4	WARM LOAD A1-1 TEMP	> 100k		
J6-5	No Connection	> 100k		
J6-6	PLLO RED LOCK DETECT	> 100k		
J6-7	No Connection	> 100k		
J6-8	A1-1 DRIVE MTR CURR	> 100k		
J6-9	+15 V ANT DR MON	> 100k		
J6-10	+5 V ANT DR MON	> 100k		
J6-11	+15 V SIG PROC MON	> 100k		
J6-12	+5 V SIG PROC MON	> 100k		
J6-13	L.O. VOLTAGE CH 3 MON	> 100k		
J6-14	L.O. VOLTAGE CH 5 MON	> 100k		
J6-15	L.O. VOLTAGE CH 7 MON	> 100k		
J6-16	+15 VDC PLL LO MON	> 100k		
J6-17	+10 V MIXER/AMP MON	> 100k		
J6-18	L.O. VOLTAGE CH 15 MON	> 100k		
J6-19	No Connection	> 100k		
J6-20	28 V TMB RTN	> 100k		
J6-21	RF SHELF A1-2 TEMP	> 100k		
J6-22	A1-2 SCAN MTR TEMP	> 100k		
J6-23	WARM LOAD A1-2 TEMP	> 100k		
J6-24	No Connection	> 100k		
J6-25	PLLO PRI LOCK DETECT	> 100k		
J6-26	No Connection	> 100k		
J6-27	A1-2 DRIVE MTR CURR	> 100k		
J6-28	-15 V ANT DR MON	> 100k		
J6-29	-15 V SIG PROC MON	> 100k		
J6-30	L.O. VOLTAGE CH 4 MON	> 100k		
J6-31	L.O. VOLTAGE CH 6 MON	> 100k		
J6-32	L.O. VOLTAGE CH 8 MON	> 100k		
J6-33	-15 VDC PLL LO MON	> 100k		
J6-34	+8 V IF AMP MON	> 100k		
J6-35	No Connection	> 100k		
J6-36	No Connection	> 100k		
J6-37	No Connection	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 5 of 9)
Grounding System Test (Paragraph 3.2.4.1)

J7 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J7-1	Chassis GND (E7)	< 1	< 1	P
J7-2	No Connection	> 100k	> 100k	P
J7-3	REDUN PLO LOCK DET	> 100k	↑	↑
J7-4	15 V RTN (2/3)	> 100k		
J7-5	15 V RTN (2/3)	> 100k		
J7-6	DUMP TEST POINT	> 100k		
J7-7	No Connection	> 100k		
J7-8	CH3 OUT TEST POINT	> 100k		
J7-9	CH4 OUT TEST POINT	> 100k		
J7-10	CH5 OUT TEST POINT	> 100k		
J7-11	CH6 OUT TEST POINT	> 100k		
J7-12	CH7 OUT TEST POINT	> 100k		
J7-13	CH8 OUT TEST POINT	> 100k		
J7-14	CH9 OUT TEST POINT	> 100k		
J7-15	No Connection	> 100k		
J7-16	No Connection	> 100k		
J7-17	GSE CMD LSB	> 100k		
J7-18	GSE CMD MSB-1	> 100k		
J7-19	+5 V GSE INTERLOCK A	> 100k		
J7-20	No Connection	> 100k		
J7-21	No Connection	> 100k		
J7-22	PRI PLO LOCK DET	> 100k		
J7-23	No Connection	> 100k		
J7-24	I/H TEST POINT	> 100k		
J7-25	No Connection	> 100k		
J7-26	15 V RTN (2/3)	> 100k		
J7-27	CH10 OUT TEST POINT	> 100k		
J7-28	CH11 OUT TEST POINT	> 100k		
J7-29	CH12 OUT TEST POINT	> 100k		
J7-30	CH13 OUT TEST POINT	> 100k		
J7-31	CH14 OUT TEST POINT	> 100k		
J7-32	CH15 OUT TEST POINT	> 100k		
J7-33	No Connection	> 100k		
J7-34	No Connection	> 100k		
J7-35	GSE CMD MSB	> 100k	↓	↓
J7-36	5 V RTN (1)	> 100k		
J7-37	+5 V GSE INTERLOCK B	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 6 of 9)
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-1	J1-2	+28 V MLB	< 1	< 1	P
J1-1	J1-14	+28 V MLB	< 1	< 1	↑
J1-1	J1-15	+28 V MLB	< 1	↑	
J1-3	J1-4	28 V MLB RTN	< 1		
J1-3	J1-16	28 V MLB RTN	< 1		
J1-3	J1-17	28 V MLB RTN	< 1		
J1-5	J1-6	+28 V PLB	< 1		
J1-5	J1-18	+28 V PLB	< 1		
J1-5	J1-19	+28 V PLB	< 1		
J1-7	J1-8	28 V PLB RTN	< 1		
J1-7	J1-20	28 V PLB RTN	< 1		
J1-7	J1-21	28 V PLB RTN	< 1		
J1-9	J1-22	+28 V TMB	< 1		
J1-10	J1-23	28 V TMB RTN	< 1		
J1-10	J6-20	28 V TMB RTN	< 1		
J4-12	J4-24	+10 V INTERFACE BUS	< 1		
J4-13	J4-25	10 V INTERFACE BUS RTN	< 1	< 1	
J1-1	J1-3	+28 V MLB	> 100k	> 100k	
J1-1	J1-5	+28 V MLB	> 100k	↑	
J1-1	J1-7	+28 V MLB	> 100k		
J1-1	J1-9	+28 V MLB	> 100k		
J1-1	J1-10	+28 V MLB	> 100k		
J1-1	J1-24	+28 V MLB	> 100k		
J1-1	J1-25	+28 V MLB	> 100k		
J1-1	J2-3	+28 V MLB	> 100k		
J1-1	J4-12	+28 V MLB	> 100k		
J1-1	J4-13	+28 V MLB	> 100k		
J1-3	J1-5	28 V MLB RTN	> 100k		
J1-3	J1-7	28 V MLB RTN	> 100k		
J1-3	J1-9	28 V MLB RTN	> 100k		
J1-3	J1-10	28 V MLB RTN	> 100k		
J1-3	J1-24	28 V MLB RTN	> 100k		
J1-3	J1-25	28 V MLB RTN	> 100k		
J1-3	J2-3	28 V MLB RTN	> 100k		
J1-3	J4-12	28 V MLB RTN	> 100k		
J1-3	J4-13	28 V MLB RTN	> 100k	> 100k	P

TEST DATA SHEET 1 (Sheet 7 of 9)
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-5	J1-7	+28 V PLB	> 100k	> 100k	P
J1-5	J1-9	+28 V PLB	> 100k	↑	↑
J1-5	J1-10	+28 V PLB	> 100k		
J1-5	J1-24	+28 V PLB	> 100k		
J1-5	J1-25	+28 V PLB	> 100k		
J1-5	J2-3	+28 V PLB	> 100k		
J1-5	J4-12	+28 V PLB	> 100k		
J1-5	J4-13	+28 V PLB	> 100k		
J1-7	J1-9	28 V PLB RTN	> 100k		
J1-7	J1-10	28 V PLB RTN	> 100k		
J1-7	J1-24	28 V PLB RTN	> 100k		
J1-7	J1-25	28 V PLB RTN	> 100k		
J1-7	J2-3	28 V PLB RTN	> 100k		
J1-7	J4-12	28 V PLB RTN	> 100k		
J1-7	J4-13	28 V PLB RTN	> 100k		
J1-9	J1-10	+28 V TMB	> 100k		
J1-9	J1-24	+28 V TMB	> 100k		
J1-9	J1-25	+28 V TMB	> 100k		
J1-9	J2-3	+28 V TMB	> 100k		
J1-9	J4-12	+28 V TMB	> 100k		
J1-9	J4-13	+28 V TMB	> 100k		
J1-10	J1-24	28 V TMB RTN	> 100k		
J1-10	J1-25	28 V TMB RTN	> 100k		
J1-10	J2-3	28 V TMB RTN	> 100k		
J1-10	J4-12	28 V TMB RTN	> 100k		
J1-10	J4-13	28 V TMB RTN	> 100k		
J1-24	J1-25	SAFETY HTR PWR	> 100k		
J1-24	J2-3	SAFETY HTR PWR	> 100k		
J1-24	J4-12	SAFETY HTR PWR	> 100k		
J1-24	J4-13	SAFETY HTR PWR	> 100k		
J1-25	J2-3	SAFETY HTR PWR RTN	> 100k		
J1-25	J4-12	SAFETY HTR PWR RTN	> 100k		
J1-25	J4-13	SAFETY HTR PWR RTN	> 100k		
J2-3	J4-12	SIGNAL RTN	> 100k	↓	↓
J2-3	J4-13	SIGNAL RTN	> 100k	↓	↓
J4-12	J4-13	+10 V INTERFACE BUS	> 100k	> 100	P

TEST DATA SHEET 1 (Sheet 8 of 9)
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J2-2	J4-13	DATA CLOCK (C1)	> 2k	> 2k	P
J2-5	J4-13	DIGITAL-A DATA OUT	> 2k		
J2-6	J4-13	DATA ENABLE (A1)	> 2k		
J2-7	J4-13	8 SEC SYNC PULSE	> 2k		
J3-1	J4-13	1.248 MHZ CLK	> 2k		
J3-2	J4-13	1.248 MHZ CLK RTN	> 2k		
J4-2	J4-13	MODULE PWR DISCONN	> 2k		
J4-3	J4-13	SURVIVAL HTR ON	> 2k		
J4-4	J4-13	MODULE TOTALLY OFF	> 2k		
J4-5	J4-13	SCANNER A1-2 ON/OFF	> 2k		
J4-6	J4-13	ANT AT COLD CAL POS	> 2k		
J4-7	J4-13	PLL SELECT	> 2k		
J4-8	J4-13	ANT AT NADIR POS	> 2k		
J4-9	J4-13	COLD CAL POS MSB (IN)	> 2k		
J4-14	J4-13	MODULE PWR CONN	> 2k		
J4-15	J4-13	SURVIVAL HTR OFF	> 2k		
J4-16	J4-13	SCANNER A1-1 ON/OFF	> 2k		
J4-17	J4-13	ANT AT WARM CAL POS	> 2k		
J4-18	J4-13	FULL SCAN	> 2k		
J4-19	J4-13	COLD CAL POS LSB (IN)	> 2k		
J5-2	J4-13	MODULE PWR IND	> 2k		
J5-3	J4-13	COLD CAL POS MSB (OUT)	> 2k		
J5-5	J4-13	SCANNER A1-2 ON/OFF	> 2k		
J5-6	J4-13	ANT IN COLD CAL POS	> 2k		
J5-7	J4-13	PLL PRI/RED	> 2k		
J5-9	J4-13	SURV HTR ON/OFF	> 2k		
J5-11	J4-13	COLD CAL POS LSB (OUT)	> 2k		
J5-12	J4-13	SCANNER A1-1 ON/OFF	> 2k		
J5-13	J4-13	ANT IN WARM CAL POS	> 2k		
J5-14	J4-13	ANT IN NADIR POS	> 2k		
J5-15	J4-13	FULL SCAN MODE	> 2k	↓	↓

TEST DATA SHEET 1 (Sheet 9 of 9)
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J6-2	J1-10	RF SHELF A1-1 TEMP	> 2k	22K	P
J6-3	J1-10	A1-1 SCAN MTR. TEMP	> 2k		
J6-4	J1-10	WARM LOAD A1-1 TEMP	> 2k		
J6-6	J4-13	PLLO RED LOCK DETECT	> 2k		
J6-8	J4-13	A1-1 DRIVE MTR CVR	> 2k		
J6-9	J4-13	+15 VDC ANT DRIVE MON	> 2k		
J6-10	J4-13	+5 VDC ANT DRIVE MON	> 2k		
J6-11	J4-13	+15 VDC SIG PROC MON	> 2k		
J6-12	J4-13	+5VDC SIG PROC MON	> 2k		
J6-13	J4-13	L.O. VOLTAGE CH3 MON	> 2k		
J6-14	J4-13	L.O. VOLTAGE CH5 MON	> 2k		
J6-15	J4-13	L.O. VOLTAGE CH7 MON	> 2k		
J6-16	J4-13	+15 VDC PLL LO MON	> 2k		
J6-17	J4-13	+10 V MIXER/AMP MON	> 2k		
J6-18	J4-13	L.O. VOLTAGE CH15 MON	> 2k		
J6-21	J4-10	RF SHELF A1-2 TEMP	> 2k		
J6-22	J4-10	A1-2 SCAN MTR. TEMP	> 2k		
J6-23	J4-10	WARM LOAD A1-2 TEMP	> 2k		
J6-25	J4-13	PLLO PRI LOCK DETECT	> 2k		
J6-27	J4-13	A1-2 DRIVE MTR CURR	> 2k		
J6-28	J4-13	-15 VDC ANT DRIVE MON	> 2k		
J6-29	J4-13	-15 VDC SIG PROC MON	> 2k		
J6-30	J4-13	L.O. VOLTAGE CH4 MON	> 2k		
J6-31	J4-13	L.O. VOLTAGE CH6 MON	> 2k		
J6-32	J4-13	L.O. VOLTAGE CH8 MON	> 2k		
J6-33	J4-13	-15 VDC PLL LO MON	> 2k		
J6-34	J4-13	IF AMP MON	> 2k	↓	↓

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

A. Hair
Test Systems Engineer

Date

Willie Wallace
Quality Control

Date

Customer Representative
(Flight Hardware Only)

Date

10 Mar 99

TEST DATA SHEET 2
+28 MLB During Turn-on Transient (Paragraph 3.2.4.2.1.1)

At 28.56 Vdc:

			Required*		
Step	Parameter	Measured/ Calculated	S/N 101-104	S/N 105 & up	Pass/ Fail
7	Time to reach steady state current	<u>237.2</u> ms	20 ms max	300 ms max	P
8	Peak Current	<u>4.61</u> Amps	10.6 Amps	5.9 Amps	P
10	Rate of Change (Slope): dI/dT	<u>76.37</u> mA/μs	677 mA/μs	250 mA/μs	P

At 27.44 Vdc:

			Required*		
Step	Parameter	Measured/ Calculated	S/N 101-104	S/N 105 & up	Pass/ Fail
7	Time to reach steady state current	<u>242.7</u> ms	20 ms max	300 ms max	P
8	Peak Current	<u>4.456</u> Amps	10.6 Amps	5.9 Amps	P
10	Rate of Change (Slope): dI/dT	<u>68.09</u> mA/μs	677 mA/μs	250 mA/μs	P

At 28.00 Vdc:

			Required*		
Step	Parameter	Measured/ Calculated	S/N 101-104	S/N 105 & up	Pass/ Fail
7	Time to reach steady state current	<u>253.6</u> ms	20 ms max	300 ms max	P
8	Peak Current	<u>4.495</u> Amps	10.6 Amps	5.9 Amps	P
10	Rate of Change (Slope): dI/dT	<u>60.96</u> mA/μs	677 mA/μs	250 mA/μs	P

* Refer to Figure 5.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

MAR 1 - 1999

AMSU
8
SEIT
Test Systems Engineer3-16-993-16-99

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date



X=246.4ms ΔX=237.2ms
 YG=21.8994m ΔYG=21.59mV
 Y=46.5333m ΔY=46.11mV

CAP TIM BUF

70.0

10.0

/Div



FxdXY 0.0 324.211. MLB+28.56V Sec

SN: 373234

AN: 1331700-2-

SN: 105

TURN-ON-TRANSIENT

TDS-2

Test Eng.

Quality

WFO

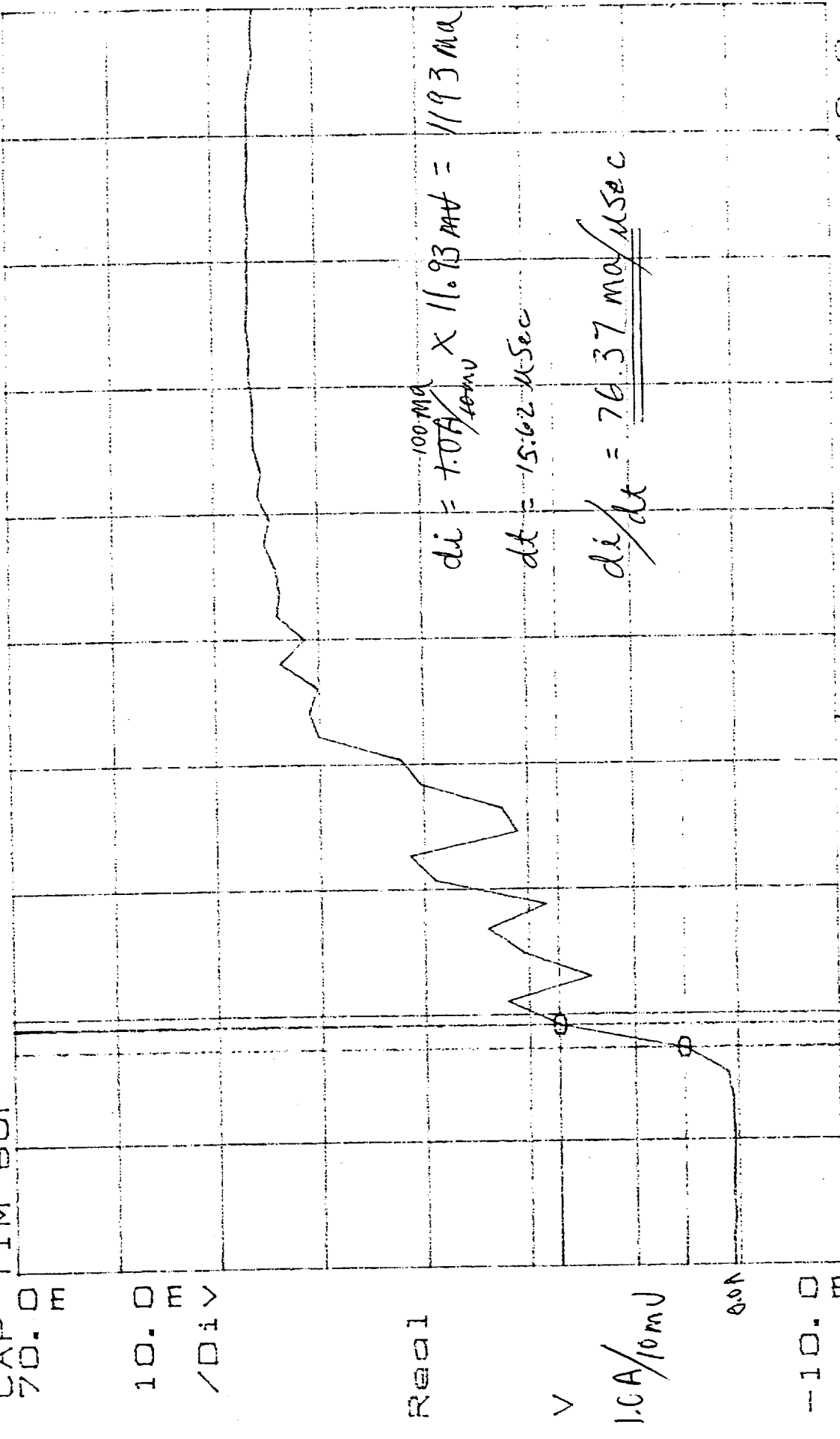
Date: 3-16-99

WFO

3-16-99

X=10.22ms ΔX=15.62μs Y=5.17576m ΔY=11.93mV
 Y=5.12867m ΔY=11.9mV

CAP TIM BUF



70.0E

10.0E

/Div

Real

V

1.0A/10mV

0.0V

-10.0E

EX: dXY 10.1m 32.4.2.1.1 +28.56V Sec 10.9m

Date: 3-16-92

Test Eng: (A430 U SET)

MLA TURN-ON di/dt

TDS-2

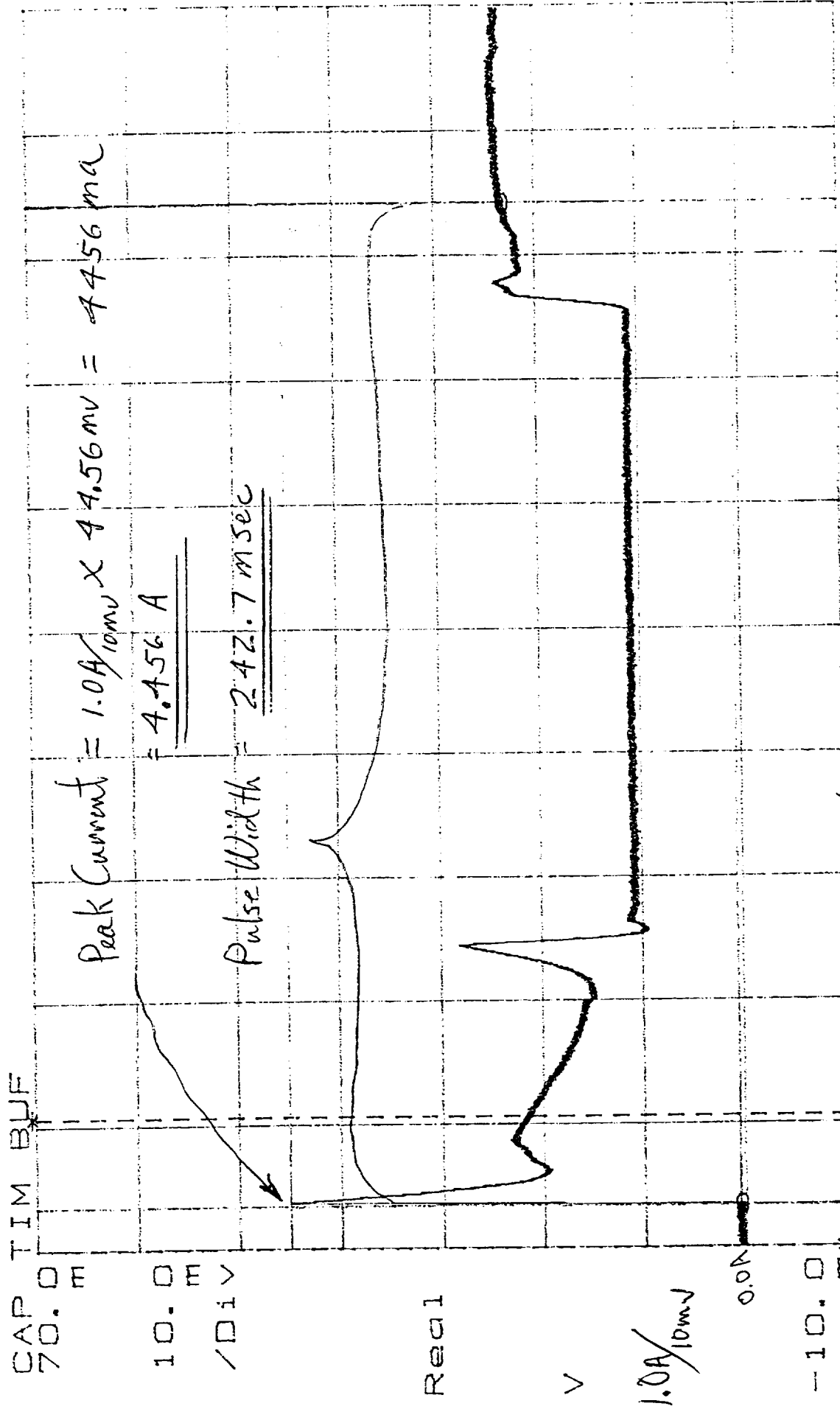
SU: 105

SN: 1331700-2-

Quality: (X46) 3-16-92

X=10.17ms ΔX=242.7ms
 Y=359.007μ ΔY=22.82mV
 CAP TIM BLUF
 70.0 F

Y=45.0788m ΔY=44.56mV

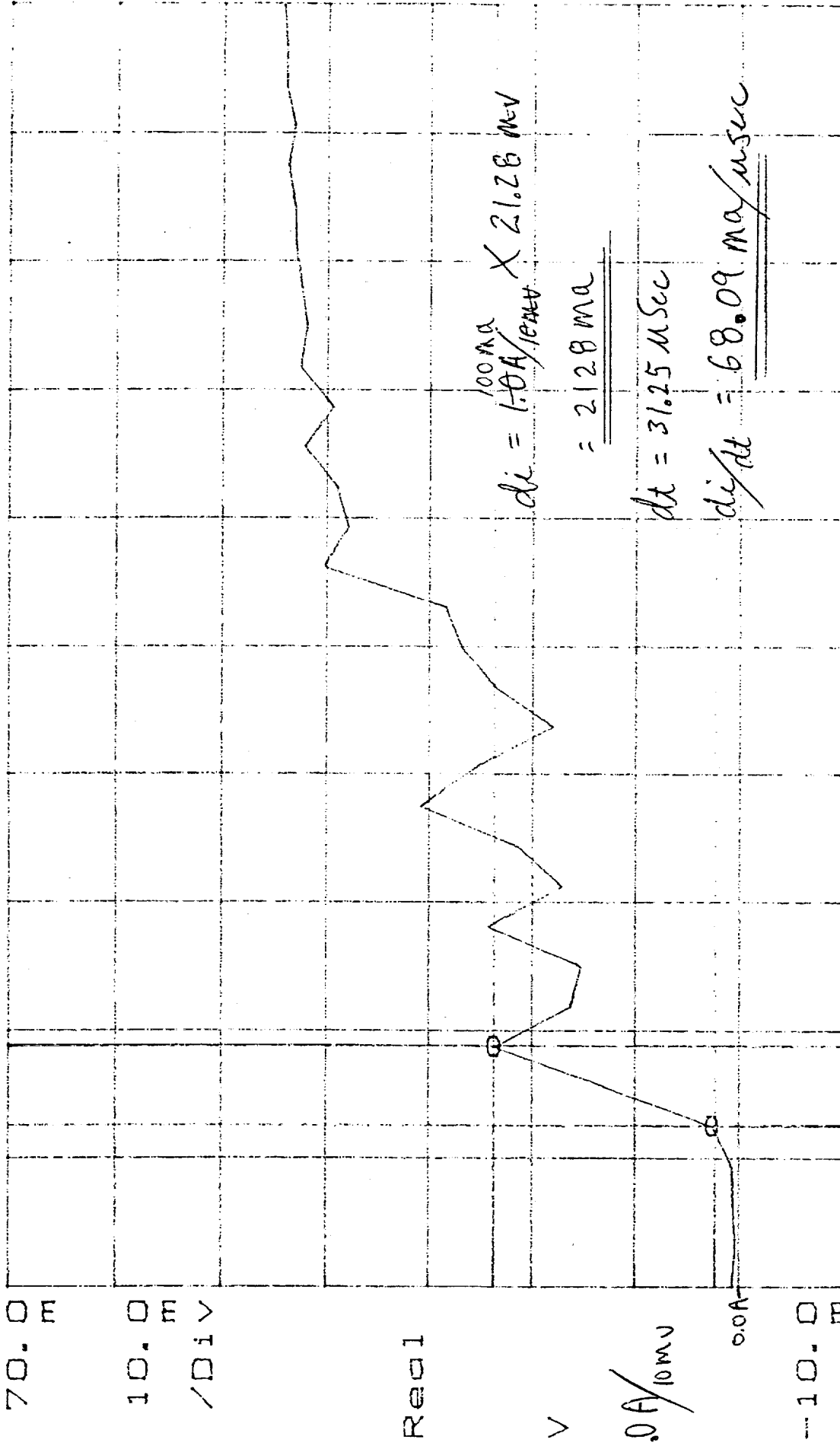


300m
 10.0 F
 1.0A/10mV
 0.0V
 -10.0 mV
 FxdXY 0.0 324.211 +27.44 V
 S/N: 373234
 P/N: 1331700-2
 SEC
 Test Eng: 3-16-99
 Quality 3-16-99
 TDS-2

X=10.72ms ΔX=31.25μs
 Y=2.56434m ΔY=21.08mV

Y=2.31515m ΔY=21.28mV

CAP TIM BUF



FX:XY

S/O: 3732.34

P/N: 1331780-2-

10.7m

32+211

SN: 105

MLB TURN-ON

di/dt

TDS-2

32+211

+27.44V

di/dt

Sec

Test Eng:

Quality:

ASU

B

SET

ASU

B

SET

107

3-16-99

Date: 3-16-99

11.2m

11.2m

11.2m

$$di = \frac{100mA}{10mV} \times 21.28mV$$

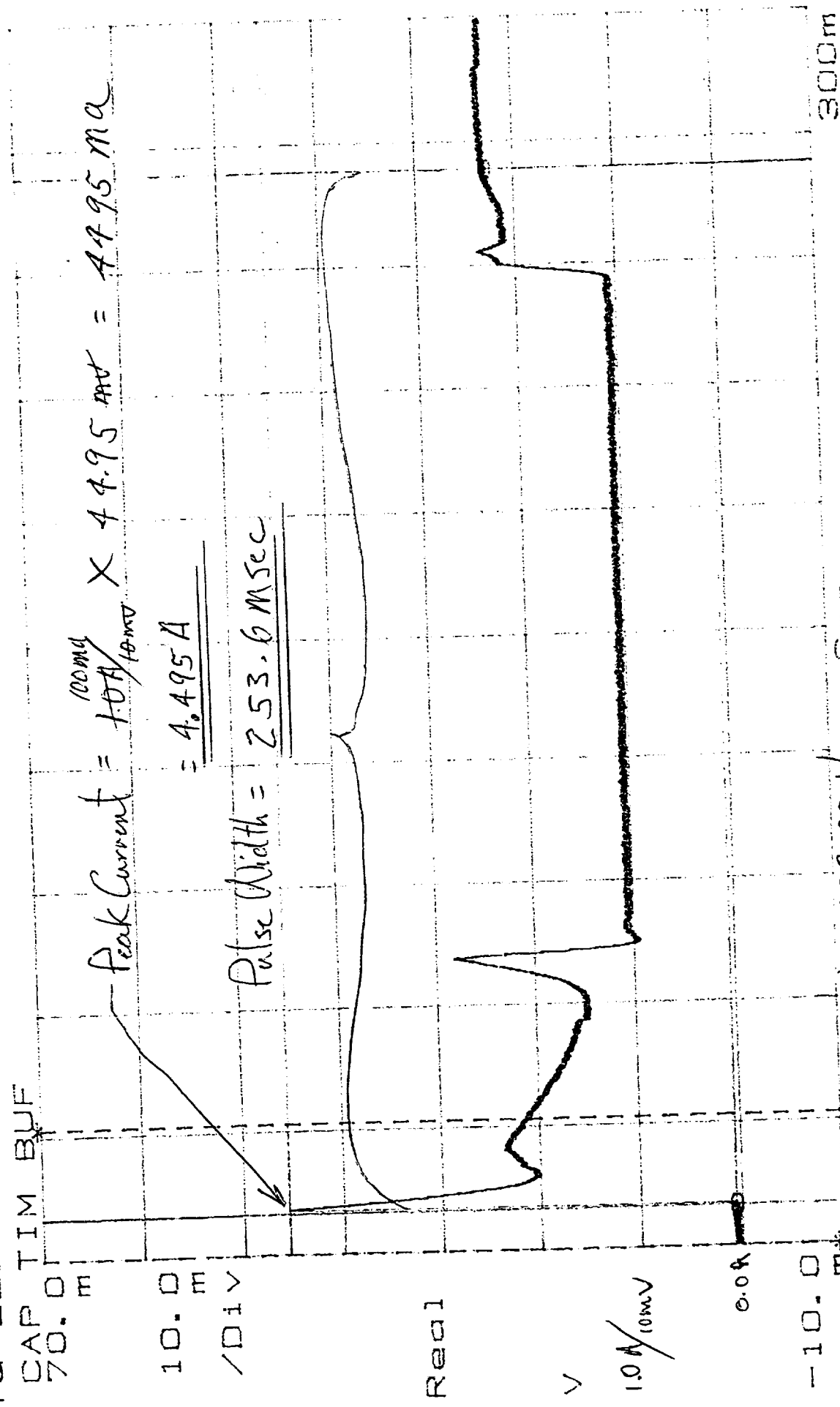
$$= 2128mA$$

$$dt = 31.25\mu Sec$$

$$di/dt = 68.09mA/\mu sec$$

X=253.4ms ΔX=253.6ms
 Y=22.7713m ΔY=22.31mV
 CAP TIM BUF
 70.0

Y=45.4667m ΔY=44.95mV

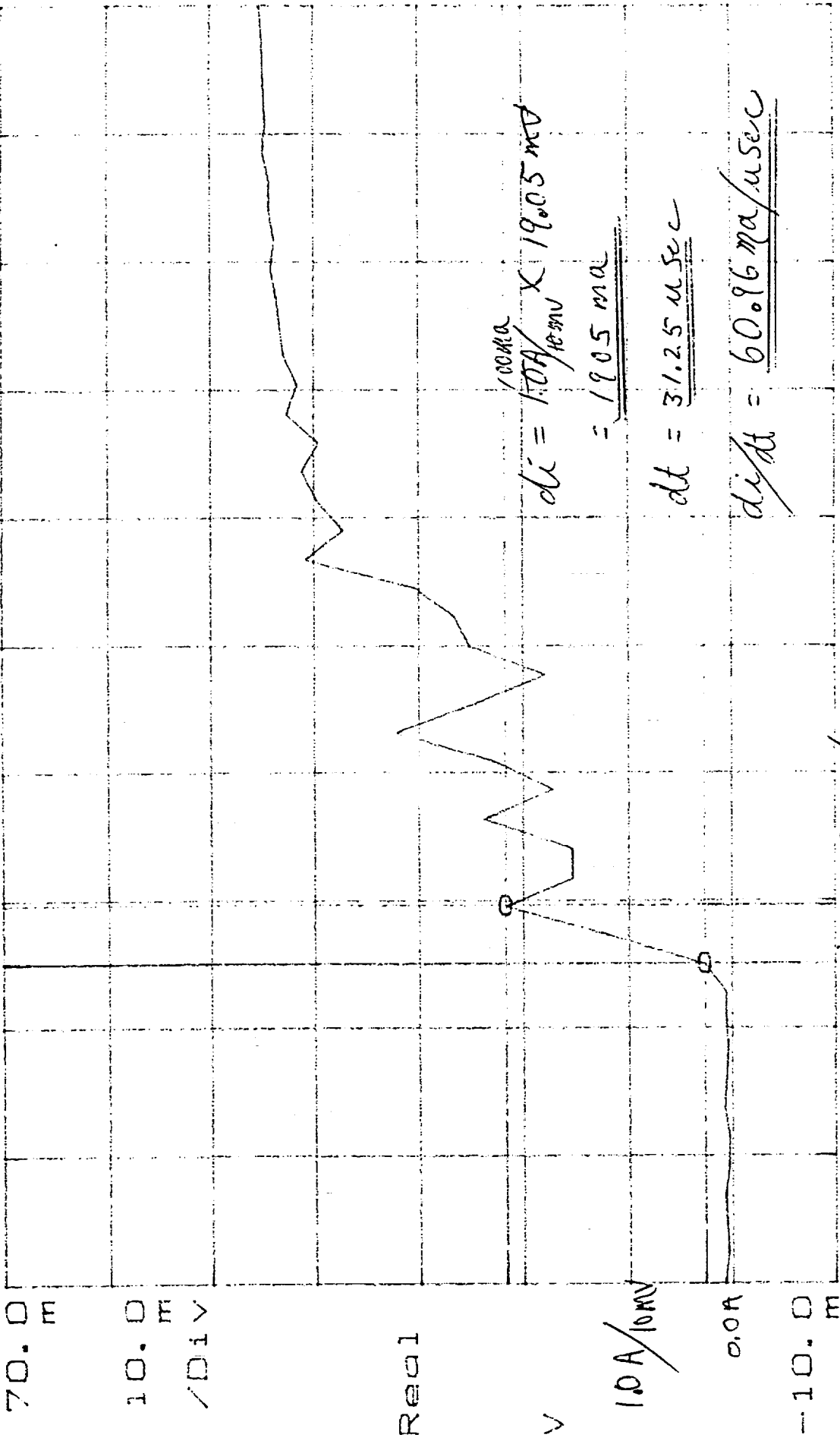


Peak Current = $\frac{100mV}{10mV} \times 4.495mA = 4.495mA$
 Pulse Width = 253.6msec

EXDXY 0.0 3242.11 +28.00 V Sec
 3732.84
 1331720-2 SNV 105
 Date: 3-16-99
 Test Eng: [Signature]
 Quality: [Signature]

X=10.55ms ΔX=31.25μs Y=2.60606m ΔY=19.05mV
 Y=21.6943m ΔY=19.08mV

CAP TIM BUF



11.0m
 Test Eng' ASU
B
SEIT
 Date: 3-16-99
 Quality: 3-16-99

FxdXY 10.3m 32.4.2.1.1 +28.00V
 S/O: 8732.34 MCB TURN-ON di/dt
 P/N: 1331700-2- SN: 105 TDS-2

TEST DATA SHEET 3
+28V MLB Operating Power (Paragraph 3.2.4.2.1.2)

3/16/99
00-1

Step	+28V MLB at 27 Volts	Measured	Units	Required	Pass/Fail
2	+28 V MLB voltage at 27 V (V_b) (Measured)	27.01 V	Volts	27.0 ± 0.1	P
3	Average Current (I_V) (PLO #1)	2.34 A	Amps	N/A	N/A
4	+28 V MLB bus power = $I_V \times V_b$ (PLO #1)	63.2 W	Watts	82 W max	P
+28 V MLB at 28 Volts					
59	+28 V MLB Bus Voltage at 28 V (V_b) (Measured)	28.01 V	Volts	28.0 ± 0.1	P
610	Average Current (I_V) (PLO #1)	2.26 A	Amps	N/A	N/A
711	+28 V MLB Operating Power = $I_V \times V_b$ (PLO #1)	63.3 W	Watts	82 W max	P
+28 V MLB at 29 Volts					
816	+28 V MLB voltage at 29 V (V_b) (Measured)	29.01 V	Volts	29.0 ± 0.1	P
917	Average Current (I_V) (PLO #1)	2.16 A	Amps	N/A	N/A
1018	+28 V MLB operating power = $I_V \times V_b$ (PLO #1)	63.2 W	Watts	82 W max	P
6	AVERAGE CURRENT (I_V) (PLO #2)	2.34 A	AMPS	N/A	N/A
7	+28V MLB bus power = $I_V \times V_b$ (PLO #2)	63.2 W	Watts	82 W max	P
13	AVERAGE CURRENT (I_V) (PLO #2)	2.28 A	AMPS	N/A	N/A
14	+28V MLB bus power = $I_V \times V_b$ (PLO #2)	63.8 W	Watts	82 W max	P
20	Average Current (I_V) (PLO #2)	2.2 A	AMPS	N/A	N/A
21	+28V MLB bus power = $I_V \times V_b$ (PLO #2)	63.8 W	Watts	82 W max	P

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

3-17-99



MAR 17 1999

Test Systems Engineer (7A) 200

MAR 7 1999

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date



TEST DATA SHEET 4 (Sheet 1 of 2)
+28 Pulse Load Bus (Paragraph 3.2.4.2.2.1-3.2.4.2.2.5)



RAH RATH
3/16/99

Paragraph	Parameter	Measured or Calculated	Required	Pass/ Fail
3.2.4.2.2.1	From -0.1 to two seconds			
	Peak Current = I_p	1.1 Amps	1.3 amps max	P
3.2.4.2.2.2	From 2 to 4 seconds			
	Peak Current = I_p	1.09 Amps	1.3 amps max	P
3.2.4.2.2.3	From 4 to 6 seconds			
	Peak Current = I_p	1.087 Amps	1.3 amps max	P
3.2.4.2.2.4	From 6 to 8 seconds			
	Peak Current = I_p	1.073 Amps	1.3 amps max	P
3.2.4.2.2.5	Eight Sec. Integrated Current Measurement:			
	Current	104.77 mA	None	P
3.2.4.2.2.6	Turn-on Transient:			
	dI/dT	310.2 mA/ μ s	744 mA/ μ s *	P
	Peak Current = I_p	8.18 Amps	11.5 Amps	A

* Refer to Figure 9.

Bus current during the I/H, D period

Paragraph	Parameter	Measured or Calculated	Pass/ Fail
3.2.4.2.2.1	From -0.1 to 2 secs	13.57 mA	N/A
3.2.4.2.2.2	From 2 to 4 secs	11.62 mA	N/A
3.2.4.2.2.3	From 4 to 6 secs	9.69 mA	N/A
3.2.4.2.2.5	From 6 to 8 secs	13.57 mA	N/A

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105



Test Systems Engineer



MAR 17 1999

3-77-99

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date



$$Y = 254.55 \mu \quad \Delta Y = 678.8 \mu V$$

CAP TIM BUF

DE

010

✓Di✓

Red

$$>$$
$$\frac{200\text{ mA}}{10\text{ mV}}$$

QQA

1011

平山

FXDXY 0.0 324.2.2.1 0-25c Sec

PLB

$I/4 \rightarrow$ Current

Test Eng:

8

□
□

Date: 3-16-99

Quality: $\textcircled{24}_{200}$

MAR 17 1999

SAV: 105

P/W: 1331720-7

Y=-254.55μ ΔY=581.8μV

X=2.3414 Sec
Y=54.5313mV

CAP TIM REC
70.0 m

Peak Current = $200 \text{ mA} / 10 \text{ mV} \times 54.5 \text{ mV} = 1090 \text{ mA}$

= 1.09 A

10.0 m
/DIV

Real

Current I/H, D Period = $581.8 \mu\text{V} \times 200 \text{ mA} / 10 \text{ mV} = 11.62 \text{ mA}$

V

200mA/10mV
0.0A

-10.0 m

FXDXY 2.0 32A.222 2-4 Sec SEC

S/O: 373234

PLB I/H, D Current
Peak Current

P/N: 1331780-2

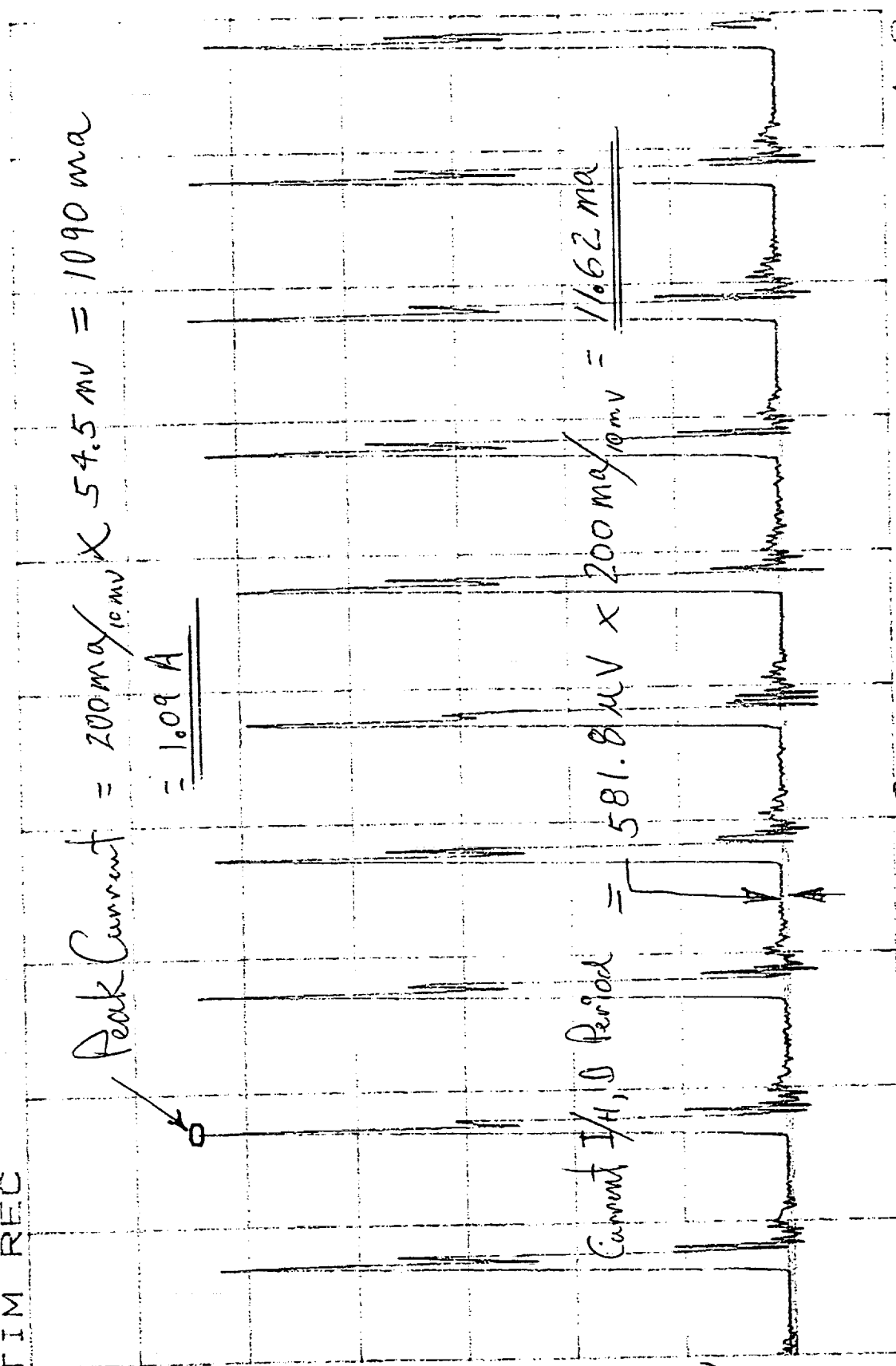
SN: 105

Test Eng: (ASU 8 SET)

Date: 3-16-99

MAR 17 1999

Quality: (7A 200)



4.0

X=4.8961 Sec
Y=54.372mV

CAP TIM REC
70.0

10.0
m
/DIV

Real

V

200 mV/10mV

0.0A

10.0

EXXY 4.0

S/O 373234

P/N 1331780-2 SN: 105

324-223 4-6 Sec Sec

PLB I_H, D Current TDS-4

Peak Current

AMBU
8
SEIT

Test Eng

002

Quality

MAR 17 1999

Date: 3-16-99

6.0

Y=375.757μ ΔY=484.8μV

$$\text{Peak Current} = 200 \text{ mA} / 10 \text{ mV} \times 54.37 \text{ mV} = 1087$$
$$= 1.087 \text{ A}$$

Current I_H, D Period

9.69 mA

$$= 484.8 \mu \text{V} \times 200 \text{ mA} / 10 \text{ mV}$$

X=6.6812 Sec
Y=53.6492mV

CAP TIM BUF
70.0 F

Y=-496.97 μ $\Delta Y=678.8 \mu V$

Peak Current = $200 \text{ mA} / 10 \text{ mV} \times 53.64 \text{ mV} = 1073 \text{ mA}$

$= 1.073 \text{ A}$

10.0 m
/DIV

Real

V

200 mA
10mV

-10.0 m

FXDXY

S/O: 573234

P/N: 1331720-2

6.0 3.24.2.2.4

PLB

SN: 105

6-8 Sec

1/H, Δ Current

Peak Current

Sec

Current

1/H, Δ Period = $678.8 \mu V \times 200 \text{ mA} / 10 \text{ mV} = 13.57 \text{ mA}$

(AWG B SLIT)

Test Eng:

TDS-4

Date: 3-10-99

Quality:

(200 B SLIT)

MAR 17 1999

X=2.8203 Sec
Y=55.228mV

CAP TIM BUF

70.0E

10.0E

/DIV

Real

V

200mV/10mV

0.0A

-10.0

mV

FXD Y 0.0 3.2.4.2.2.5

slb 373234

P/N 1331720-2

SW 105

Integrated Current

TDS-4

Sec

Test Eng

ANSI
B
SET

Quality

7A
200

MAR 17 1999

Date: 3-17-99

8.0

X=7.9961 Sec
Y=41.9108mV

M: CAP TIM REC

70.0 m

$$\text{Current} = \frac{20 \text{ mA}}{200 \text{ mV} / 10 \text{ mV}} = 41.91 \text{ mA} = 838.2 \text{ mA}$$

10.0 m

/Div

$$\text{Ave Current} = \frac{\text{Current}}{8 \text{ Sec}} = \frac{104.77 \text{ mA}}{8 \text{ Sec}}$$

Real

V

200 mA / 10 mV

0.0 A

-10.0 m

Fxd Y 0.0

329.2.2.5

Integrated Current

S/o: 373234

P/N: 1331700-2 SN: 105

TD5-4

Sec

AMU
B
SET

Test Eng:

7A
200

Quality:

Date: 3-17-99

MAR 17 1999

() ()

Y=472.724 μ $\Delta Y=409.0$ mV

CAP TIM BUF

470

50.0

mV

Peak Current = $200 \text{ mA} / 10 \text{ mV} \times 409.0 \text{ mV}$
= 8180 mA
= 8.18 A

REGL

V

200 mA / 10 mV

-10.0

0.00 A

EXDXY 0.0 324 2.2.6

PLB TURN-ON TRANSIENT

S/O: 373234

P/N: 1331720 SN: 105

TDS-4

Quality: TA 200

MAR 17 1999

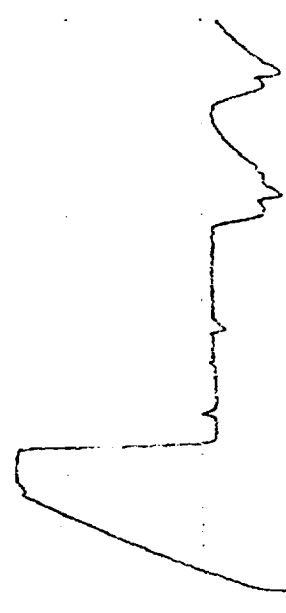
TEST

Test Eng:

500

20.0m

Date: 3-17-99



Y=62.7273m ΔY=242.3mV

X=10.17ms ΔX=15.62μS
Yd=62.7237m ΔYd=242.1mV

CAP TIM BUF

470 m

50.0 m

/Div

Reul

V

200ma/10mV

10.0

0.0 -m

EXXY 10.1562m

32.4.22.6

PLB TURN-ON di/dt

705-4

56:373234

SN: 1331720 SW: 105

$$di = \frac{20 \text{ ma}}{200 \text{ ma/10mV}} \times 242.3 \text{ mV} = 4846 \text{ mA}$$

$$dt = 15.62 \text{ μSec}$$

$$\frac{di}{dt} = \underline{\underline{310.24 \text{ mA/μSec}}}$$

ALUM B BELT

10.223-7m

Date: 3-17-99

MAR 17 1999

Quality: 7A 200

TEST DATA SHEET 4 (Sheet 2 of 2)
+28 Pulse Load Bus (Paragraph 3.2.4.2.2.6)

3/17/99
AMSU 10 SEIT

Bus current during warm cal, cold cal & Nadir

Paragraph	Parameter	Measured or Calculated	Pass/ Fail
7			
3.2.4.2.2.6(2)	Warm cal	11.19 mA	N/A
3.2.4.2.2.6(3)	Cold cal	11.21 mA	N/A
3.2.4.2.2.6(4)	Nadir	19.06 mA	N/A
3.2.4.2.2.7(5)	WARM CAL (MOTORS OFF)	0.01 mA	N/A

AMSU 10 SEIT

3-17-99

91
30

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

AMSU 8 SEIT

3-17-99

Test Systems Engineer

Date

002
V2

MAR 17 1999

Quality Control

Date

AMSU 10 SEIT

MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date



AMSU A1-17 A1 EXE:62 WARM CAL MODE F1 17 MAR 99 10:11:30 SCAN NUMBER 2335

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

COMMANDS

[9] MODULE POWER = CONNECT ANTENNA IN COLD CAL POSIT = NO [15]
[10] SURVIVAL HEATER POWER = OFF ANTENNA IN NADIR POSITION = NO [16]
[11] MODULE TOTALLY OFF = ON ANTENNA IN FULL SCAN MODE = NO [17]
[12] SCANNER A1 - 1 POWER = OFF PLL POWER = PLL0 # 1 [18]
[13] SCANNER A1 - 2 POWER = OFF COLD CAL POSITION MSB = ZERO [19]
[14] ANTENNA IN WARM CAL POSIT = YES COLD CAL POSITION LSB = ZERO [20]

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 3

32.4.22.7 Step 6 TDS-4

PLB Bus Current

WARM CAL

MOTORS OFF

AMSU
B
SET

Test Eng:

74
200

Quality

Date: 3-17

MAR 17 1999

S/o: 373234

P/N: 1331720-2 SN: 105



LEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE	11111111	572	WARM CAL SAMPLE 17	16180
2	SYNC SEQUENCE	11111111	574		17251
3	SYNC SEQUENCE	11111111	576		16615
4	UNIT ID AND SERIAL NO	00010001	578		18092
5	DIGITAL B DATA	00001000	580		17987
6	DIGITAL B DATA	00001000	582		17431
7	DIGITAL B DATA	00001000	584		19244
8	DIGITAL B DATA	00000000	586		16614
9	REFLECTOR 1 POSITION	10411	588	REFLECTOR 1 POSITION 18	10411
10	REFLECTOR 2 POSITION	10212	590	REFLECTOR 2 POSITION 18	10212
11	REFL 1 POS	10212	592	REFL 1 POS 18 2ND LOOK	10411
12	REFL 2 POS	10212	594	REFL 2 POS 18 2ND LOOK	10212
13	WARM CAL SAMPLE 1	16056	596	WARM CAL SAMPLE 18	16055
14		16466	598		16464
15		16801	600		16807
16		16706	602		16707
17		16206	604		16206
18		16180	606		16180
19		17251	608		17249
20		16608	610		16608
21		18100	612		18090
22		17986	614		17986
23		17429	616		17436
24		19280	618		19257
25		16615	620		16615
26	REFLECTOR 1 POSITION	10411	622	REFLECTOR 1 POSITION 19	10411
27	REFLECTOR 2 POSITION	10212	624	REFLECTOR 2 POSITION 19	10212
28	REFL 1 POS	10411	626	REFL 1 POS 19 2ND LOOK	10411
29	REFL 2 POS	10212	628	REFL 2 POS 19 2ND LOOK	10212
30	WARM CAL SAMPLE 2	16052	630	WARM CAL SAMPLE 19	16055
31		16466	632		16464
32		16801	634		16802
33		16710	636		16712
34		16204	638		16204
35		16177	640		16182
36		17249	642		17248
37		16599	644		16607
38		18093	646		18097
39		17985	648		17988
40		17443	650		17428
41		19246	652		19243
42		16614	654		16613
43	REFLECTOR 1 POSITION	10411	656	REFLECTOR 1 POSITION 20	10411
44	REFLECTOR 2 POSITION	10212	658	REFLECTOR 2 POSITION 20	10212
45	REFL 1 POS	10411	660	REFL 1 POS 20 2ND LOOK	10411
46	REFL 2 POS	10212	662	REFL 2 POS 20 2ND LOOK	10212
47	WARM CAL SAMPLE 3	16054	664	WARM CAL SAMPLE 20	16052
48		16464	666		16466
49		16800	668		16804
50		16708	670		16710

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94	CH	16206	672	CH	16201
96	CH	16181	674	CH	16181
98	CH	17249	676	CH	17249
100	CH	16605	678	CH	16606
102	CH	18101	680	CH	18096
104	CH	17990	682	CH	17989
106	CH	17435	684	CH	17431
108	CH	19257	686	CH	19280
110	CH	16614	688	CH	16613
112	REFLECTOR 1 POSITION	10411	690	REFLECTOR 1 POSITION 21	10411
114	REFLECTOR 2 POSITION	10212	692	REFLECTOR 2 POSITION 21	10212
116	REFL 1 POS 4 2ND LOOK	10411	694	REFL 1 POS 21 2ND LOOK	10411
118	REFL 2 POS 4 2ND LOOK	10212	696	REFL 2 POS 21 2ND LOOK	10212
120	WARM CAL SAMPLE 4	16057	698	WARM CAL SAMPLE 21	16057
122	CH	16464	700	CH	16465
124	CH	16806	702	CH	16803
126	CH	16709	704	CH	16708
128	CH	16204	706	CH	16202
130	CH	16184	708	CH	16179
132	CH	17251	710	CH	17250
134	CH	16611	712	CH	16612
136	CH	18093	714	CH	18099
138	CH	17991	716	CH	17991
140	CH	17436	718	CH	17427
142	CH	19267	720	CH	19262
144	CH	16615	722	CH	16614
146	REFLECTOR 1 POSITION	10411	724	REFLECTOR 1 POSITION 22	10411
148	REFLECTOR 2 POSITION	10212	726	REFLECTOR 2 POSITION 22	10212
150	REFL 1 POS 5 2ND LOOK	10411	728	REFL 1 POS 22 2ND LOOK	10411
152	REFL 2 POS 5 2ND LOOK	10212	730	REFL 2 POS 22 2ND LOOK	10212
154	WARM CAL SAMPLE 5	16054	732	WARM CAL SAMPLE 22	16056
156	CH	16469	734	CH	16462
158	CH	16799	736	CH	16803
160	CH	16708	738	CH	16706
162	CH	16204	740	CH	16202
164	CH	16181	742	CH	16180
166	CH	17252	744	CH	17251
168	CH	16605	746	CH	16610
170	CH	18095	748	CH	18087
172	CH	17990	750	CH	17988
174	CH	17431	752	CH	17450
176	CH	19268	754	CH	19258
178	CH	16614	756	CH	16613
180	REFLECTOR 1 POSITION	10411	758	REFLECTOR 1 POSITION 23	10411
182	REFLECTOR 2 POSITION	10212	760	REFLECTOR 2 POSITION 23	10212
184	REFL 1 POS 6 2ND LOOK	10411	762	REFL 1 POS 23 2ND LOOK	10411
186	REFL 2 POS 6 2ND LOOK	10212	764	REFL 2 POS 23 2ND LOOK	10212
188	WARM CAL SAMPLE 6	16055	766	WARM CAL SAMPLE 23	16054
190	CH	16465	768	CH	16461
192	CH	16803	770	CH	16805

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
194	CH 6	16708	772	CH 6	16710
196	CH 7	16205	774	CH 7	16204
198	CH 8	16178	776	CH 8	16179
200	CH 9	17247	778	CH 9	17248
202	CH 10	16605	780	CH 10	16610
204	CH 11	18098	782	CH 11	18096
206	CH 12	17990	784	CH 12	17979
208	CH 13	17440	786	CH 13	17432
210	CH 14	19268	788	CH 14	19264
212	CH 15	16615	790	CH 15	16615
214	REFLECTOR 1 POSITION 7	10411	792	REFLECTOR 1 POSITION 24	10411
216	REFLECTOR 2 POSITION 7	10212	794	REFLECTOR 2 POSITION 24	10212
218	REFL 1 POS 7 2ND LOOK	10411	796	REFL 1 POS 24 2ND LOOK	10411
220	REFL 2 POS 7 2ND LOOK	10212	798	REFL 2 POS 24 2ND LOOK	10212
222	WARM CAL SAMPLE 7	16060	800	WARM CAL SAMPLE 24	16053
224	CH 3	16468	802	CH 3	16467
226	CH 4	16802	804	CH 4	16801
228	CH 5	16708	806	CH 5	16707
230	CH 6	16200	808	CH 6	16205
232	CH 7	16181	810	CH 7	16179
234	CH 8	17250	812	CH 8	17254
236	CH 9	16613	814	CH 9	16604
238	CH 10	18090	816	CH 10	18103
240	CH 11	17976	818	CH 11	17985
242	CH 12	17426	820	CH 12	17433
244	CH 13	19261	822	CH 13	19237
246	CH 14	16616	824	CH 14	16613
248	CH 15	10411	826	CH 15	10411
250	REFLECTOR 1 POSITION 8	10212	828	REFLECTOR 1 POSITION 25	10212
252	REFLECTOR 2 POSITION 8	10411	830	REFLECTOR 2 POSITION 25	10411
254	REFL 1 POS 8 2ND LOOK	10212	832	REFL 1 POS 25 2ND LOOK	10212
256	REFL 2 POS 8 2ND LOOK	16053	834	REFL 2 POS 25 2ND LOOK	16056
258	WARM CAL SAMPLE 8	16465	836	WARM CAL SAMPLE 25	16465
260	CH 3	16708	838	CH 3	16796
262	CH 4	16202	840	CH 4	16706
264	CH 5	16178	842	CH 5	16204
266	CH 6	17250	844	CH 6	16181
268	CH 7	16611	846	CH 7	17249
270	CH 8	18091	848	CH 8	16610
272	CH 9	17993	850	CH 9	18099
274	CH 10	17437	852	CH 10	17983
276	CH 11	19261	854	CH 11	17446
278	CH 12	16614	856	CH 12	19240
280	CH 13	10411	858	CH 13	16615
282	CH 14	10212	860	CH 14	10411
284	CH 15	10212	862	CH 15	10212
286	REFLECTOR 1 POSITION 9	10411	864	REFLECTOR 1 POSITION 26	10411
288	REFLECTOR 2 POSITION 9	10212	866	REFLECTOR 2 POSITION 26	10212
290	REFL 1 POS 9 2ND LOOK	10212	868	REFL 1 POS 26 2ND LOOK	16053
292	REFL 2 POS 9 2ND LOOK	16052	870	REFL 2 POS 26 2ND LOOK	16469
	WARM CAL SAMPLE 9	16468		WARM CAL SAMPLE 26	
	CH 3			CH 3	
	CH 4			CH 4	

LEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
294	CH 5	16802	872	CH 5	16802
296	CH 6	16709	874	CH 6	16708
298	CH 7	16208	876	CH 7	16202
300	CH 8	16181	878	CH 8	16182
302	CH 9	17251	880	CH 9	17247
304	CH 10	16609	882	CH 10	16609
306	CH 11	18095	884	CH 11	18094
308	CH 12	17987	886	CH 12	17994
310	CH 13	17426	888	CH 13	17426
312	CH 14	19258	890	CH 14	19268
314	CH 15	16615	892	CH 15	16613
316	REFLECTOR 1 POSITION 10	10411	894	REFLECTOR 1 POSITION 27	10411
318	REFLECTOR 2 POSITION 10	10212	896	REFLECTOR 2 POSITION 27	10212
320	REFL 1 POS 10 2ND LOOK	10411	898	REFL 1 POS 27 2ND LOOK	10411
322	REFL 2 POS 10 2ND LOOK	10212	900	REFL 2 POS 27 2ND LOOK	10212
324	WARM CAL SAMPLE 10	16053	902	WARM CAL SAMPLE 27	16054
326	CH 3	16466	904	CH 3	16467
328	CH 4	16801	906	CH 4	16806
330	CH 5	16710	908	CH 5	16712
332	CH 6	16206	910	CH 6	16202
334	CH 7	16184	912	CH 7	16179
336	CH 8	17247	914	CH 8	17249
338	CH 9	16608	916	CH 9	16608
340	CH 10	18099	918	CH 10	18095
342	CH 11	17987	920	CH 11	17993
344	CH 12	17446	922	CH 12	17426
346	CH 13	19248	924	CH 13	19233
348	CH 14	16615	926	CH 14	16613
350	CH 15	10411	928	CH 15	10411
352	REFLECTOR 1 POSITION 11	10212	930	REFLECTOR 1 POSITION 28	10212
354	REFLECTOR 2 POSITION 11	10411	932	REFLECTOR 2 POSITION 28	10411
356	REFL 1 POS 11 2ND LOOK	10212	934	REFL 1 POS 28 2ND LOOK	10212
358	REFL 2 POS 11 2ND LOOK	10212	936	REFL 2 POS 28 2ND LOOK	16054
360	WARM CAL SAMPLE 11	16466	938	WARM CAL SAMPLE 28	16465
362	CH 3	16804	940	CH 3	16803
364	CH 4	16709	942	CH 4	16706
366	CH 5	16203	944	CH 5	16203
368	CH 6	16183	946	CH 6	16179
370	CH 7	17253	948	CH 7	17250
372	CH 8	16603	950	CH 8	16611
374	CH 9	18093	952	CH 9	18093
376	CH 10	17994	954	CH 10	17990
378	CH 11	17445	956	CH 11	17439
380	CH 12	19241	958	CH 12	19257
382	CH 13	16615	960	CH 13	16613
384	CH 14	10411	962	CH 14	10411
386	REFLECTOR 1 POSITION 12	10212	964	REFLECTOR 1 POSITION 29	10212
388	REFLECTOR 2 POSITION 12	10411	966	REFLECTOR 2 POSITION 29	10411
390	REFL 1 POS 12 2ND LOOK	10212	968	REFL 1 POS 29 2ND LOOK	10212
392	REFL 2 POS 12 2ND LOOK	16064	970	REFL 2 POS 29 2ND LOOK	16057
	WARM CAL SAMPLE 12			WARM CAL SAMPLE 29	

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
394	CH	16465	972	CH	16465
396	CH	16803	974	CH	16803
398	CH	16705	976	CH	16710
400	CH	16204	978	CH	16200
402	CH	16181	980	CH	16180
404	CH	17248	982	CH	17251
406	CH	16612	984	CH	16601
408	CH	18097	986	CH	18093
410	CH	17982	988	CH	17985
412	CH	17438	990	CH	17438
414	CH	19278	992	CH	19250
416	CH	16616	994	CH	16614
418	REFLECTOR 1 POSITION 13	10411	996	REFLECTOR 1 POSITION 30	10411
420	REFLECTOR 2 POSITION 13	10212	998	REFLECTOR 2 POSITION 30	10212
422	REFL 1 POS 13 2ND LOOK	10411	1000	REFL 1 POS 30 2ND LOOK	10411
424	REFL 2 POS 13 2ND LOOK	10212	1002	REFL 2 POS 30 2ND LOOK	10212
426	WARM CAL SAMPLE 13	16057	1004	WARM CAL SAMPLE 30	16056
428	CH	16467	1006	CH	16465
430	CH	16803	1008	CH	16802
432	CH	16706	1010	CH	16711
434	CH	16203	1012	CH	16203
436	CH	16181	1014	CH	16182
438	CH	17247	1016	CH	17251
440	CH	16610	1018	CH	16609
442	CH	18094	1020	CH	18095
444	CH	17974	1022	CH	17985
446	CH	17423	1024	CH	17436
448	CH	19251	1026	CH	19270
450	CH	16615	1028	CH	16615
452	REFLECTOR 1 POSITION 14	10411	1030	REFLECTOR 1 COLD CAL POS	0EE
454	REFLECTOR 2 POSITION 14	10212	1032	REFLECTOR 2 COLD CAL POS	0EE
456	REFL 1 POS 14 2ND LOOK	10411	1034	REFL 1 COLD CAL 2ND LOOK	0EE
458	REFL 2 POS 14 2ND LOOK	10212	1036	REFL 2 COLD CAL 2ND LOOK	0
460	WARM CAL SAMPLE 14	16057	1038	COLD CAL DATA 1	0
462	CH	16465	1040	CH	0
464	CH	16803	1042	CH	0
466	CH	16709	1044	CH	0
468	CH	16204	1046	CH	0
470	CH	16179	1048	CH	0
472	CH	17250	1050	CH	0
474	CH	16606	1052	CH	0
476	CH	18100	1054	CH	0
478	CH	17984	1056	CH	0
480	CH	17436	1058	CH	0
482	CH	19265	1060	CH	0
484	CH	16614	1062	COLD CAL DATA 2	0
486	REFLECTOR 1 POSITION 15	10411	1064	CH	0
488	REFLECTOR 2 POSITION 15	10212	1066	CH	0
490	REFL 1 POS 15 2ND LOOK	10411	1068	CH	0
492	REFL 2 POS 15 2ND LOOK	10212	1070	CH	0

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
494	WARM CAL SAMPLE 15	16054	1072		0
496		16464	1074		0
498		16806	1076		0
500		16711	1078		0
502		16201	1080		0
504		16177	1082		0
506		17247	1084		0
508		16608	1086		0
510		18097	1088		0
512		17983	1182	REFLECTOR 1 WARM CAL POS	0E
514		17423	1184	REFLECTOR 2 WARM CAL POS	0E
516		19269	1186	REFL 1 WARM CAL 2ND LOOK	0E
518		16615	1188	REFL 2 WARM CAL 2ND LOOK	0E
520	REFLECTOR 1 POSITION 16	10411	1190	WARM CAL DATA 1	0
522	REFLECTOR 2 POSITION 16	10212	1192		0
524	REFL 1 POS 16 2ND LOOK	10411	1194		0
526	REFL 2 POS 16 2ND LOOK	10212	1196		0
528	WARM CAL SAMPLE 16	16052	1198		0
530		16464	1200		0
532		16803	1202		0
534		16709	1204		0
536		16202	1206		0
538		16179	1208		0
540		17250	1210		0
542		16615	1212		0
544		18091	1214		0
546		17984	1216		0
548		17431	1218		0
550		19276	1220		0
552		16615	1222		0
554	REFLECTOR 1 POSITION 17	10411	1224		0
556	REFLECTOR 2 POSITION 17	10212	1226		0
558	REFL 1 POS 17 2ND LOOK	10411	1228		0
560	REFL 2 POS 17 2ND LOOK	10212	1230		0
562	WARM CAL SAMPLE 17	16054	1232		0
564		16465	1234		0
566		16805	1236		0
568		16708	1238		0
570		16203	1240		0

ELEMENT DESCRIPTION VALUE TEMPERATURE DEG C

090	SCAN MOTOR A1-1	17720	22.85
092	SCAN MOTOR A1-2	18597	24.12
094	FEEDHORN A1-1	19735	25.96
096	FEEDHORN A1-2	20799	26.58
098	RF MUX A1-1	20795	28.54
100	RF MUX A1-2	21842	30.84
102	LOCAL OSCILLATOR CHANNEL 3	22973	32.82
104	LOCAL OSCILLATOR CHANNEL 4	23143	33.08
106	LOCAL OSCILLATOR CHANNEL 5	22676	31.91
108	LOCAL OSCILLATOR CHANNEL 6	20604	28.29
110	LOCAL OSCILLATOR CHANNEL 7	21327	29.58
112	LOCAL OSCILLATOR CHANNEL 8	22544	32.36
114	LOCAL OSCILLATOR CHANNEL 15	21843	31.61
116	PLL LO #2 CHANNELS 9 THROUGH 14	20368	28.45
118	PLL LO #1 CHANNELS 9 THROUGH 14	23355	34.02
120	SPARE (NOT USED)	32767	52.86
122	MIXER/IF AMPLIFIER CHANNEL 3	22437	31.48
124	MIXER/IF AMPLIFIER CHANNEL 4	22086	31.54
126	MIXER/IF AMPLIFIER CHANNEL 5	21988	31.08
128	MIXER/IF AMPLIFIER CHANNEL 6	21086	29.07
130	MIXER/IF AMPLIFIER CHANNEL 7	21364	29.70
132	MIXER/IF AMPLIFIER CHANNEL 8	22039	31.65
134	MIXER/IF AMPLIFIER CH 9 THRU 14	20593	28.85
136	MIXER/IF AMPLIFIER CHANNEL 15	21873	31.17
138	IF AMPLIFIER CHANNEL 11 THRU 14	21841	30.99
140	IF AMPLIFIER CHANNEL 9	22294	30.99
142	IF AMPLIFIER CHANNEL 10	21919	31.22
144	IF AMPLIFIER CHANNEL 11	21096	29.08
146	DC/DC CONVERTER	22745	32.15
148	IF AMPLIFIER CHANNEL 13	21258	29.12
150	IF AMPLIFIER CHANNEL 14	20867	29.00
152	IF AMPLIFIER CHANNEL 12	20851	28.95
154	RF SHELF A1-1	21433	29.78
156	RF SHELF A1-2	21840	30.77
158	DETECTOR/PREAMPLIFIER ASSEMBLY	20032	26.77
160	A1-1 WARM LOAD 1	22877	23.20
162	A1-1 WARM LOAD 2	23077	23.23
164	A1-1 WARM LOAD 3	23145	23.29
166	A1-1 WARM LOAD 4	22838	23.27
168	A1-1 WARM LOAD CENTER	23027	23.32
170	A1-2 WARM LOAD 1	24010	24.91
172	A1-2 WARM LOAD 2	23840	24.88
174	A1-2 WARM LOAD 3	23883	24.96
176	A1-2 WARM LOAD 4	23798	24.92
178	A1-2 WARM LOAD CENTER	23661	24.79
180	TEMP SENSOR REFERENCE VOLTAGE	24886	

DESCRIPTION		STATUS		STATUS		STATUS	
ANNER A1-1 POWER		OFF	OFF	OFF	OFF	OFF	OFF
ANNER A1-2 POWER		OFF	OFF	OFF	OFF	OFF	OFF
L POWER		PLLO # 1	PLLO # 1	PLLO # 1	PLLO # 1	PLLO # 1	PLLO # 1
Tenna IN WARM CAL POSITION MODE		YES	YES	YES	YES	YES	YES
Tenna IN COLD CAL POSITION MODE		NO	NO	NO	NO	NO	NO
Tenna IN NADIR POSITION MODE		NO	NO	NO	NO	NO	NO
Tenna IN FULL SCAN MODE		NO	NO	NO	NO	NO	NO
RVIVAL HEATER POWER		OFF	OFF	OFF	OFF	OFF	OFF
DULE POWER		CONNECT	CONNECT	CONNECT	CONNECT	CONNECT	CONNECT
LD CAL POSITION MSB		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO
LD CAL POSITION LSB		ZERO	ZERO	ZERO	ZERO	ZERO	ZERO

DESCRIPTION		VALUE	DEG C	VALUE	DEG C	VALUE	DEG C
1-1 SCANNER MOTOR TEMPERATURE		214	24.9	214	24.9	214	24.9
1-2 SCANNER MOTOR TEMPERATURE		214	24.5	214	24.5	214	24.5
1-1 RF SHELF TEMPERATURE		215	23.4	215	23.4	215	23.4
1-2 RF SHELF TEMPERATURE		222	32.4	222	32.4	222	32.4
1-1 WARM LOAD TEMPERATURE		214	23.8	214	23.8	214	23.8
1-2 WARM LOAD TEMPERATURE		214	23.9	214	23.9	214	23.9

DESCRIPTION		VALUE	AMPS/ VOLTS	VALUE	AMPS/ VOLTS	VALUE	AMPS/ VOLTS
1-1 ANTENNA DRIVE MOTOR CURRENT (AVRG)		4	1.86	4	1.86	4	1.86
1-2 ANTENNA DRIVE MOTOR CURRENT (AVRG)		4	1.86	4	1.86	4	1.86
IGNAL PROCESSING +15 VDC		167	14.91	167	14.91	167	14.91
NTENNA DRIVE +15 VDC		167	14.66	167	14.66	167	14.66
IGNAL PROCESSING -15 VDC		150	-15.00	150	-15.00	150	-15.00
NTENNA DRIVE -15 VDC		149	-14.95	148	-15.00	148	-15.00
ECEIVER AMPLIFIER +8 VDC		157	8.05	157	8.05	157	8.05
IGNAL PROCESSOR +5 VDC		143	5.07	143	5.07	143	5.07
NTENNA DRIVE +5 VDC		142	4.98	142	4.98	142	4.98
ECEIVER MIXER/IF +10 VDC		166	9.97	166	9.97	166	9.97
HASE LOCK LOOP (CHANNEL 9/14)	+15 VDC	167	14.99	167	14.99	167	14.99
HASE LOCK LOOP (CHANNEL 9/14)	-15 VDC	142	-14.90	142	-14.90	142	-14.90
HASE LOCK LOOP (CHANNEL 8)		172	10.00	172	10.00	172	10.00
.O. VOLTAGE (CHANNEL 7)		169	10.00	169	10.00	169	10.00
.O. VOLTAGE (CHANNEL 6)		173	10.00	173	10.00	173	10.00
.O. VOLTAGE (CHANNEL 3)		173	10.00	173	10.00	173	10.00
.O. VOLTAGE (CHANNEL 4)		172	10.00	172	10.00	172	10.00
.O. VOLTAGE (CHANNEL 5)		171	10.11	171	10.11	171	10.11
PLLO # 2 LOCK DETECT		4	0.08	4	0.08	4	0.08
PLLO # 1 LOCK DETECT		220	4.40	220	4.40	220	4.40
.O. VOLTAGE (CHANNEL 15)		167	14.91	167	14.91	167	14.91

PRT TEMPERATURES

VARIABLE TARGET

A1-1		A1-2	
NO.	DEG K	NO.	DEG K
601	42.00	601	14.00
602	43.00	602	15.00
603	44.00	603	16.00
604	45.00	604	17.00
605	46.00	605	18.00
606	47.00	606	19.00
607	48.00	607	20.00
608	49.00	608	21.00
609	50.00	609	22.00
610	51.00	610	23.00
611	52.00	611	24.00
612	53.00	612	25.00
613	57.00	613	69.00
614	68.00	614	70.00
629	71.00	630	72.00
631	26.00	632	27.00

FIXED TARGET

BASEPLATE

THERMOCOUPLE TEMPERATURES

FIXED TARGET SHROUD

VARIABLE TARGET SHROUD

FIXED TARGET N2

VARIABLE TARGET N2

HEATER N2

FIXED TARGET FLOW METER

VARIABLE TARGET FLOW METER

BASEPLATE HEATER N2

BASEPLATE N2

BASEPLATE FLOW METER

ADJUNCT RADIATORS

A1-1		A1-2	
NO.	DEG K	NO.	DEG K
558	5.00	537	34.00
559	6.00	538	35.00
550	7.00	524	36.00
551	8.00	525	37.00
506	57.00	502	30.00
507	58.00	503	31.00
516	59.00	511	32.00
517	60.00	512	33.00
514	1.00	509	38.00
515	2.00	510	39.00
508	63.00	504	61.00
518	64.00	513	62.00
519	3.00	520	4.00
521	9.00	522	10.00
523	65.00		
575	73.00	577	74.00
579	75.00	581	76.00



•



... ..
... ..

10 Mar 99

TEST DATA SHEET 5
+28 V Analog Telemetry Bus (Paragraph 3.2.4.2.3)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
3	+28 V ATB Bus Voltage (V_{at}) (Measured)	<u>28.08</u> Volts	28.0 \pm 0.5	P
4	Av. Current (I_a)	<u>1.25</u> mA	7 mA max	P
5	+28 V ATB Operating Power = $I_a \times V_{at}$	<u>49.14</u> mW	200 mW max	P

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

R. Haid
 Test Systems Engineer

3/16/99
 Date



MAR 17 1999

Customer Representative
 (Flight Hardware Only)

Date

3-16-99
 Quality Control

Date

TEST DATA SHEET 6
+10 V Interface Bus Voltage (Paragraph 3.2.4.2.4)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
3	Av. Current (I_a)	6.82 mA	10 mA max	P
3	+10 V Interface Bus (V_{ib}) (Measured)	9.17 Volts	9.0 ± 1.0 V	P
4	+10 V Interface Bus Power = $I_a \times V_{ib}$	62.54 mW	100 mW max	P

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 379234

S/N: 105

R. Gail
Test Systems Engineer

Date

3/16/99

MAR 17 1999



3/16/99

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 8
1.248 MHz Clock Signal Verification (Paragraph 3.2.4.3.2.1)

1.248 CLOCK SIGNAL
ATTACH PHOTOGRAPH OR PLOT HERE

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
5	Clock Frequency	<u>1.248</u> MHz	1.248 \pm 10%	P
	Clock Amplitude	<u>8.92</u> Volts	9.0 \pm 1.0 V	P

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234


S/N: 101

N. Hais
Test Systems Engineer

Date

3/16/99
Quality Control

Date

 MAR 17 1999
Customer Representative
(Flight Hardware Only)

Date



TDS 8

Tek stop: 200MS/s

1449 Acqs

I

Δ	8.92	V
@	4.88	V

Ch1 Freq
1.248MHz

chi

2.vv

W 250hs

154

-2-

Function H Bars

Time
Units
Seconds

Cursor Function

Off

H Ba1's

v Bars

Paired



TEST DATA SHEET 9
"C1" Shift Pulse Verification (Paragraph 3.2.4.3.2.2)

"C1" SHIFT PULSE
Attach Photograph OR Plot Here

Parameter	Measured/ Calculated	Required	Pass/ Fail
Pulse Timing (A) *	48 μ s	48 μ s \pm 10%	P
Pulse Timing (B) *	12.4 μ s	12 μ s \pm 10%	P
Pulse Amplitude	9.0 Volts	9.0 \pm 1.0 V	P

* Refer to Figure 13 for location of the pulse timing A and B.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

M. Hail 3/16/98

Test Systems Engineer

Date



MAR 17 1999

Date

Customer Representative
(Flight Hardware Only)



Quality Control

3-16-99

Date



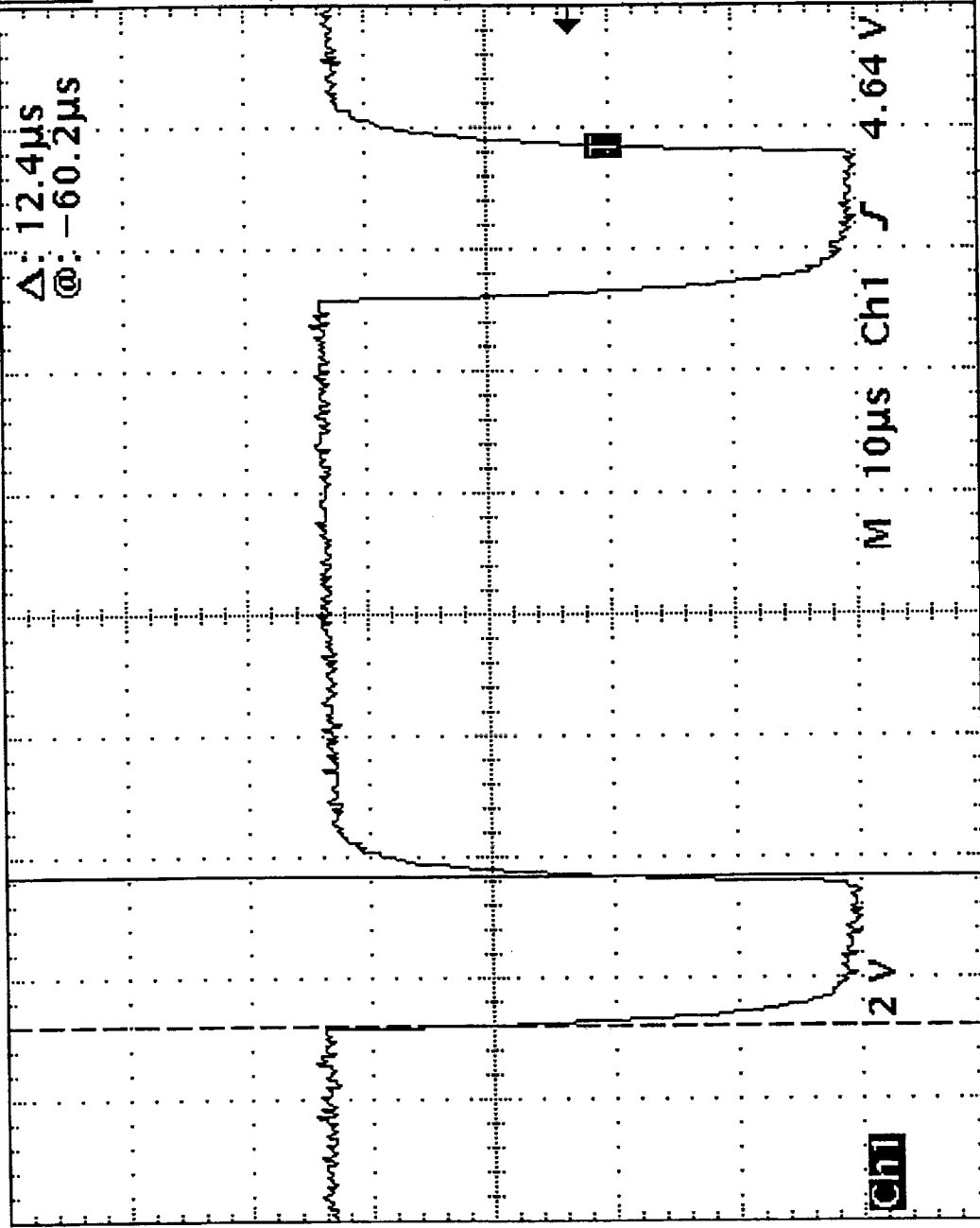
THE UNIVERSITY OF CHICAGO PRESS
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Tek Stop 5MS/s

3082 Acqs

[T]



Cursor
Function

Off

H Bars

V Bars

Paired

Function
V Bars

Time
Units

Seconds

TEST DATA SHEET 10
"A1" Select Pulse Verification (Paragraph 3.2.4.3.2.3)

"A1" SELECT PULSE
Attach Photograph or Plot Here

Parameter	Measured/ Calculated	Required	Pass/ Fail
Select Pulse Timing (F) *	960 μ s	961.5 μ s \pm 10%	P
Select Pulse Amplitude	8.56 Volts	9.0 \pm 1.0 V	P

* Refer to Figure 13 for location of the pulse timing F

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order:

373234

S/N:

105

R. Hail

3/16/99

Test Systems Engineer

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date



Quality Control

3/14/99

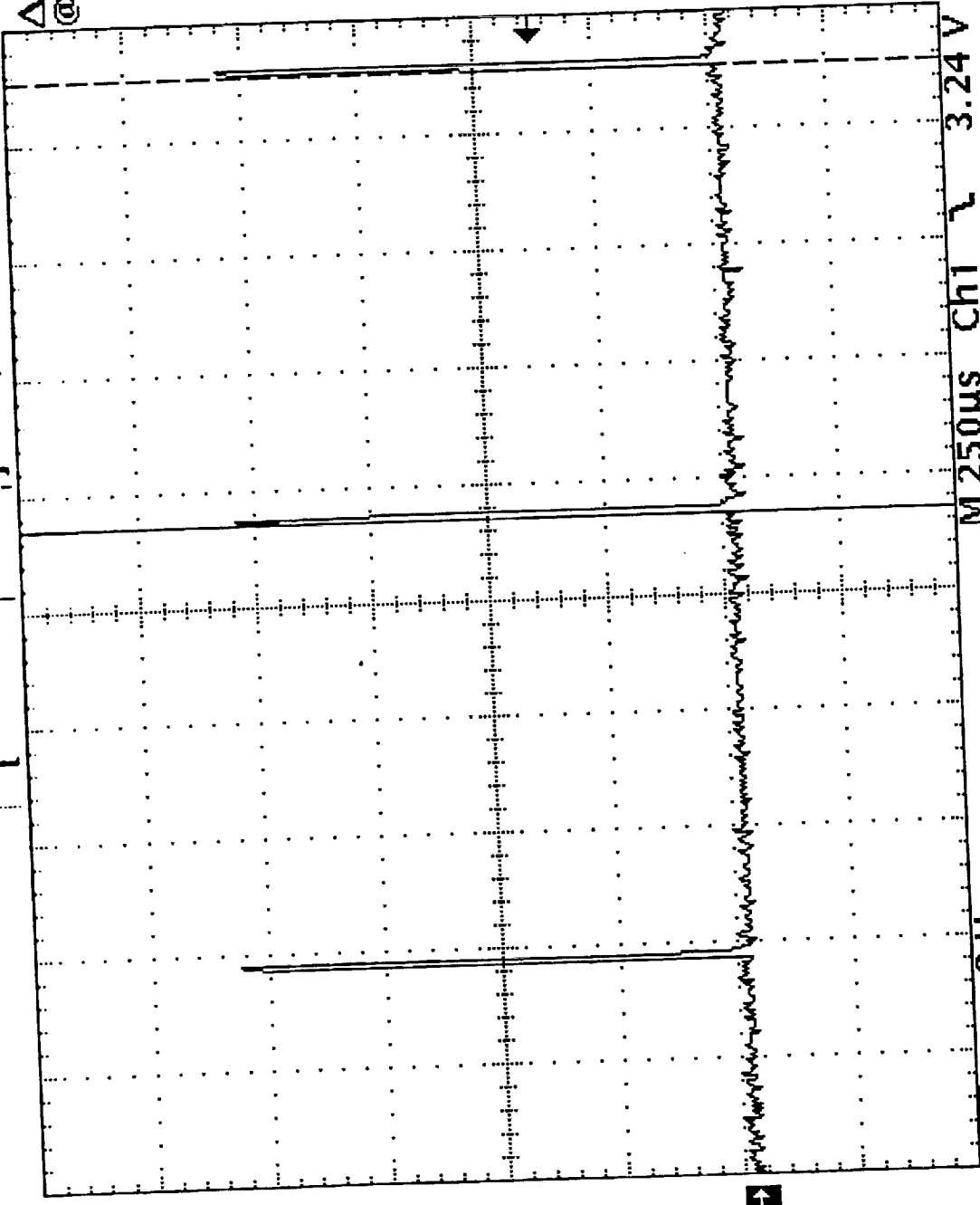
Date



TDS 10

Tek Scope 200KS/s

11 Acqs



Δ: 960µs
@: -1.94ms
Ch1 Ampl
8.56 V
Unstable
histogram

16 Mar 1999
15:01:31



TEST DATA SHEET 11
"8 Seconds" Frame Sync Pulse (Paragraph 3.2.4.3.2.4)

"8 SECONDS" FRAME SYNC PULSE
Attach Photograph or Plot Here
(Record of "C" timing only is required)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
1*	Frame Sync Pulse Timing (G)*	8 Sec	8 Sec $\pm 10\%$	P
	Frame Sync Pulse Timing (C)*	240 μ s	240.4 μ s $\pm 10\%$	P
	Frame Sync Pulse Amplitude	8.72 Volts	9.0 ± 1.0 V	P

* Refer to Figure 13 for location of the timing pulses for G and C.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105
K. Hays 3/16/99

Test Systems Engineer Date



Customer Representative
(Flight Hardware Only)

3-17-99
Date

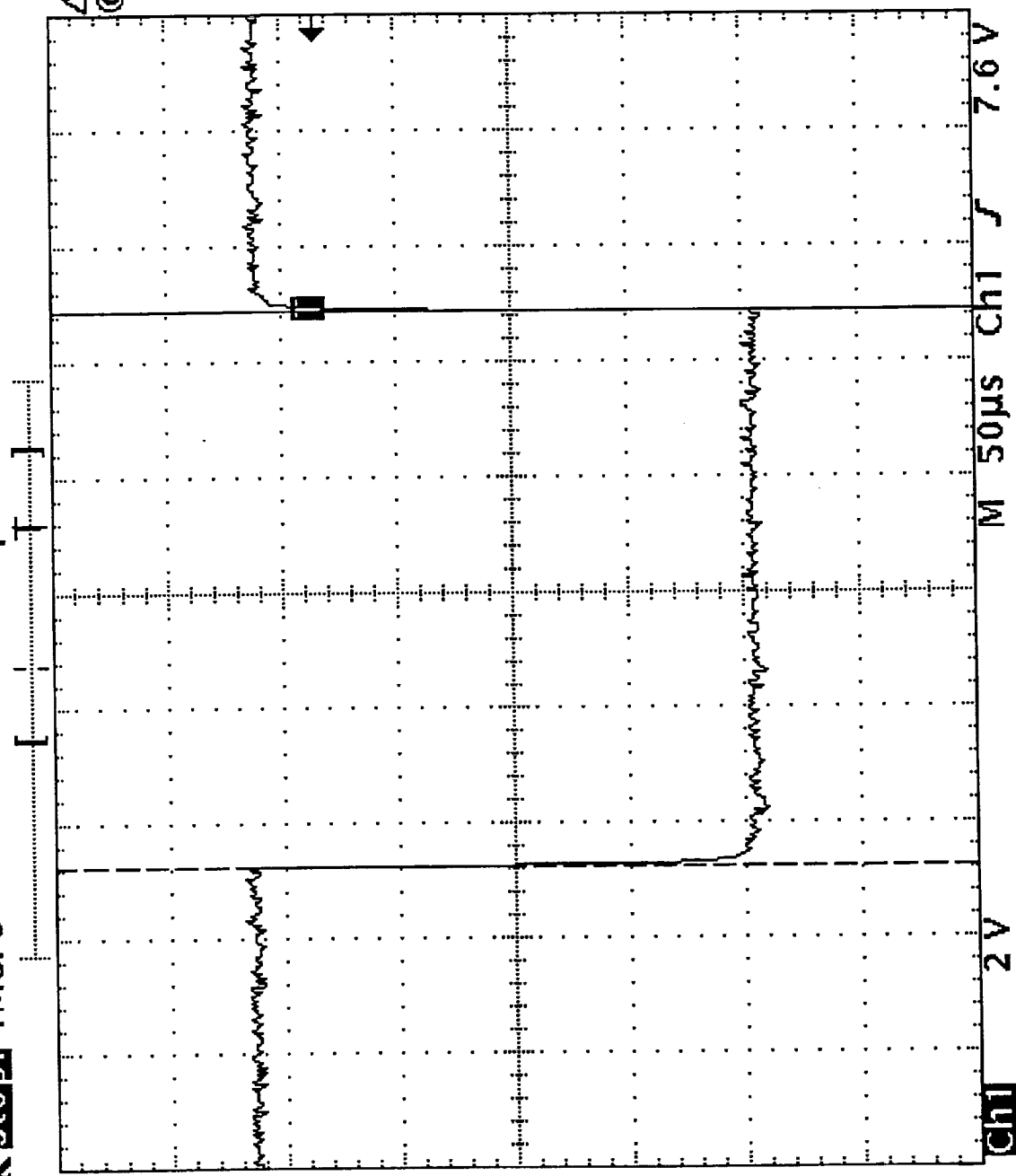


3/16/99
Quality Control Date

TDS11

Tek Stop: 1MS/s

3 Acqs



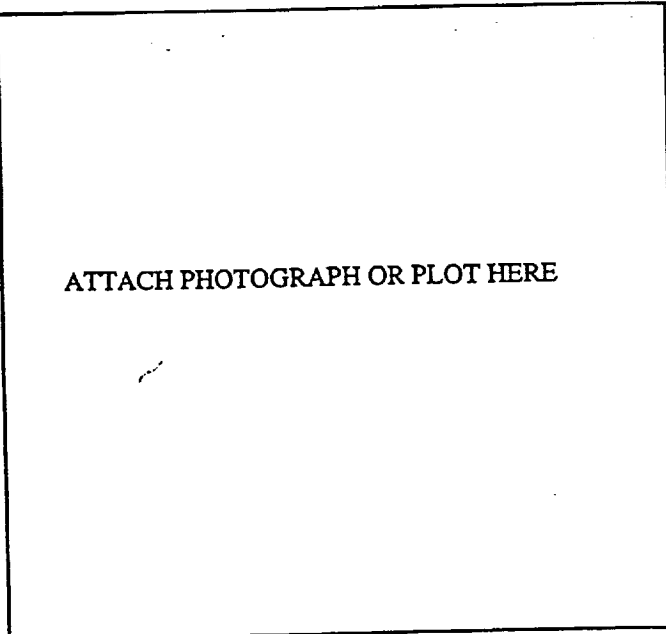
Δ: 241μs
@: -2μs
Ch1 Ampl
8.72 V

Ch1 M 50μs Ch1 7.6 V

16 Mar 1999
14:48:13

TEST DATA SHEET 12 (Sheet 1 of 2)
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the 8 seconds Frame sync pulse.



Verify that the sync pulse between H and C is as shown in Figure 19.

TIME MEASURED: 1.205ms

TIME REQUIRED: 1.2 ms $\pm 10\%$


PASS/FAIL P


Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 101

R. Hays 3/16/99
Test Systems Engineer Date

 3-17-99
Customer Representative Date
(Flight Hardware Only)

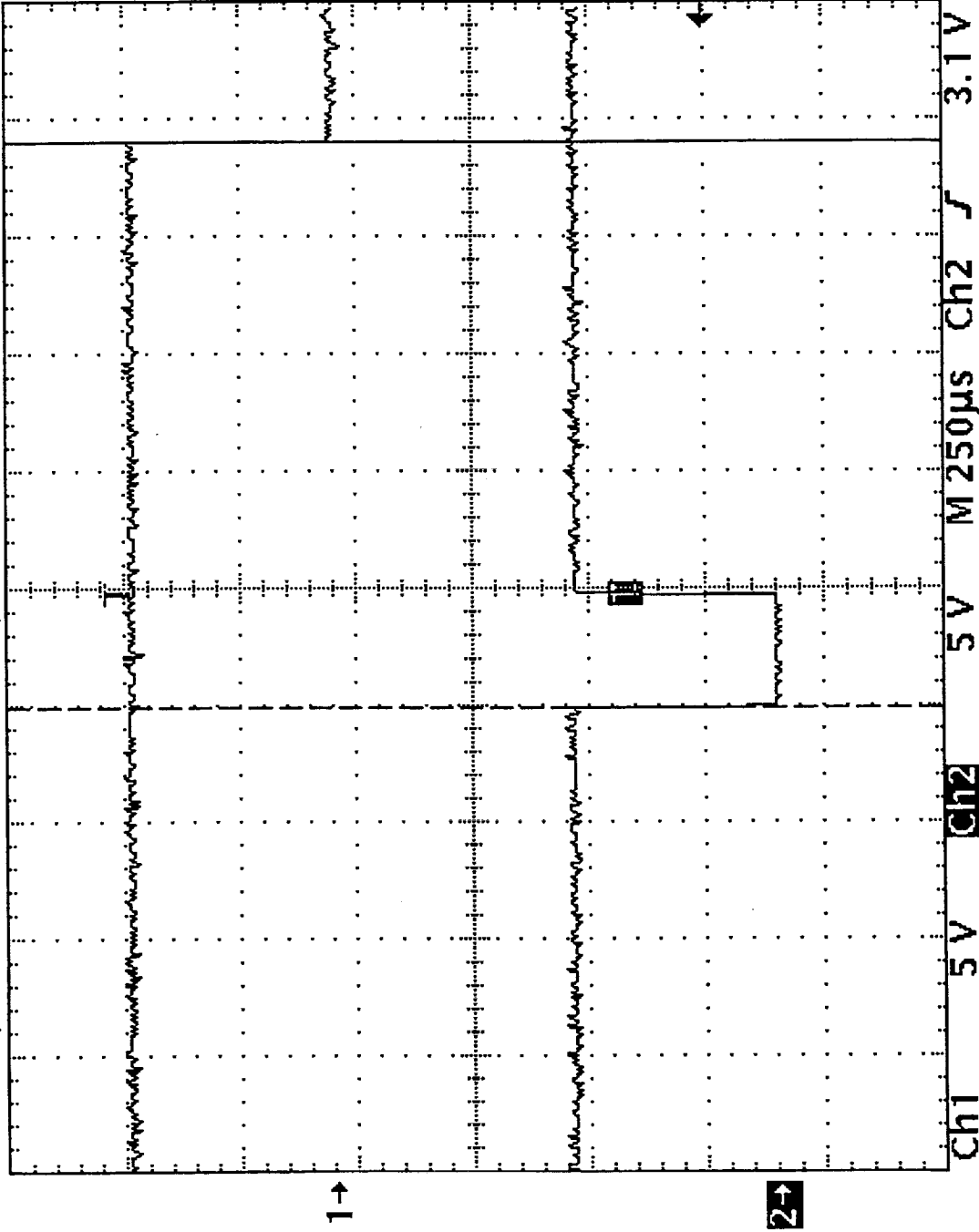
 3/14/99
Quality Control Date



Tek Stop 200KS/s

279 Acqs

TDS 12



Δ : 1.205ms
@: 960μs

Ch1 Ampl
8.8 V
Unstable
histogram

16 Mar 1999
15:22:05



TEST DATA SHEET 12 (Sheet 2 of 2)
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the C1 Shift pulse.

ATTACH PHOTOGRAPH OR PLOT HERE

Verify that the sync pulse between I and E is as shown in Figure 19.

TIME MEASURED: 24 μ S

TIME REQUIRED: 24 μ S \pm 1 μ S

PASS/FAIL P

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720


Shop Order: 373234 S/N: 101

R. Hais
Test Systems Engineer

Date

3/16/99
Quality Control

Date


Customer Representative
(Flight Hardware Only)

Date

MAR 17 1999

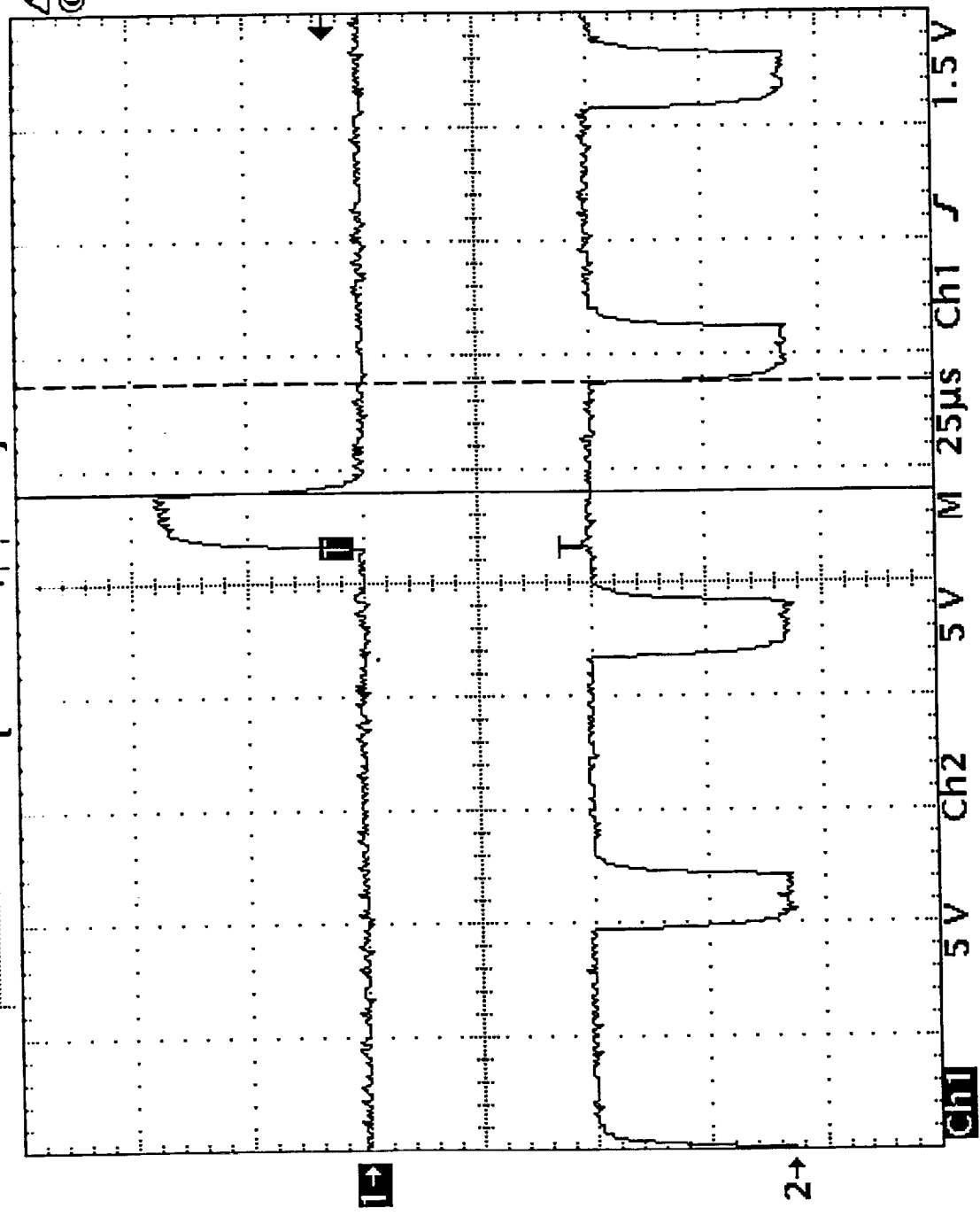


TD512

Tek Stop: 2MS/s

654 Acqs

[T]



Δ : 24 μ s
@: 12 μ s
Ch1 Ampl
8.8 V
Unstable
histogram

16 Mar 1999
15:30:28



TEST DATA SHEET 13
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the 1.248 MHz clock.

Verify that the sync pulse between I and J is as shown in Figure 19.

PASS/FAIL PASS

ATTACH PHOTOGRAPH OR PLOT HERE

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105



3-17-99

Test Systems Engineer

Date



3-17-99

Customer Representative
(Flight Hardware Only)

Date



3-17-99

Quality Control

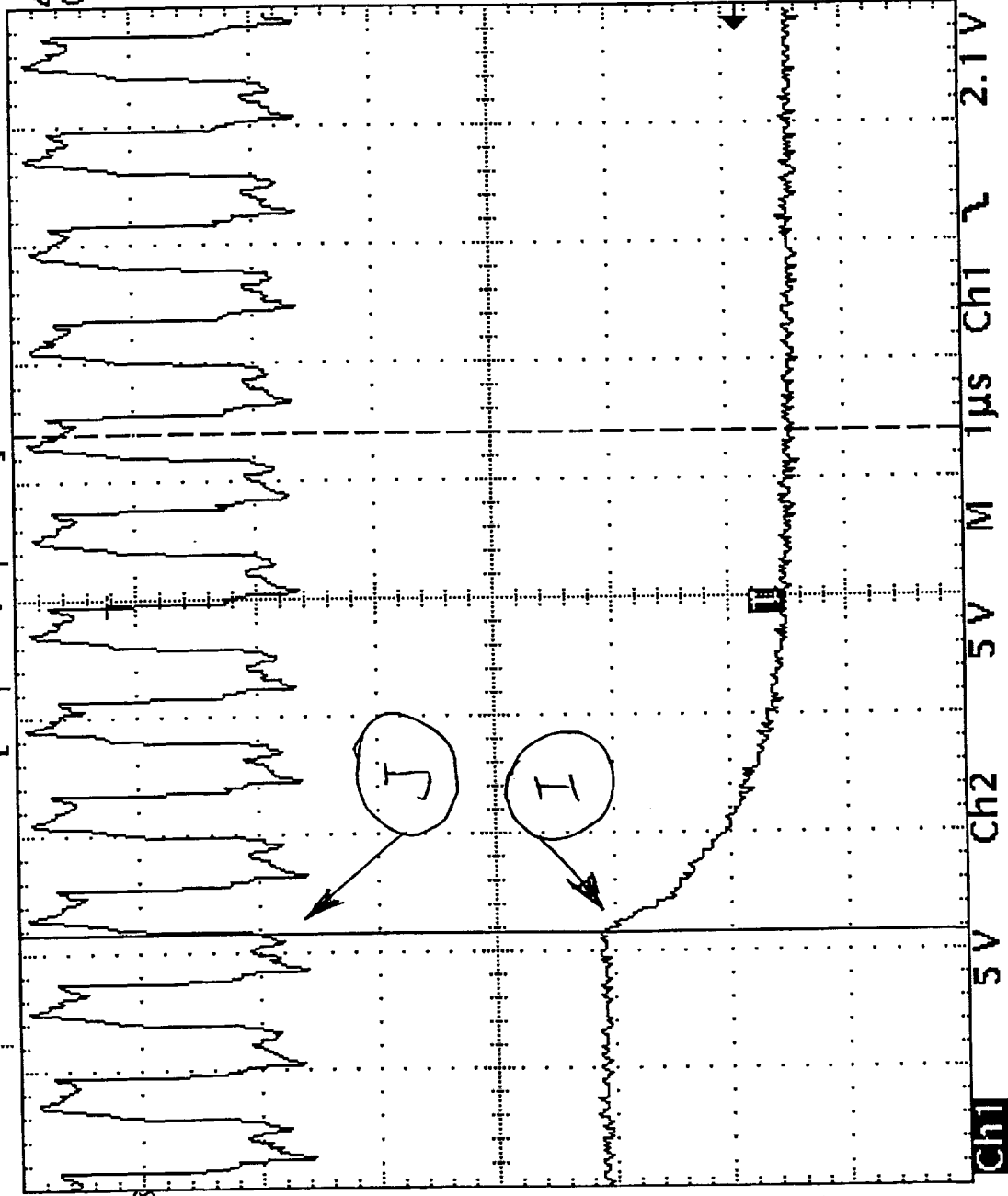
Date



Tek STOP 50MS/s

55 Acqs

Δ : 4.24 μ s
@: -2.8 μ s



1W 5xNC

17 Mar 1999
14:56:41

Date: 3-17-99

Test Eng:

TDS-13

3.2.4.3.2.5 5xNC 516 RELATIONSHIP

S/O: 3732.34

P/N: 133172.0-2 SN: 105

Quality

3-17-99



TEST DATA SHEET 14

Commands and Digital-B Telemetry Verification (Paragraphs 3.2.4.3.3.1, 3.2.4.3.3.2, 3.2.4.3.3.3, and 3.2.4.3.3.4)

Test	Digital-B Commands Verification Via STE			Visual Inspection		Pass/Fail
	Command	Observed	Required	Observed	Required	
3.2.4.3.3.1 Module Totally Off	Scanner A1-1	✓	OFF	✓	Antenna pointing to warm load.	P
	Scanner A1-2	✓	OFF	✓	Antenna pointing to warm load.	P
	Module Power		Disconnect	N/A	N/A	
	Survival Htr. Power.	✓	OFF	✓	28 V supply current=0	P
3.2.4.3.3.2 Survival Heater Power	Survival Heater ON	✓	ON	N/A	N/A	P
	Survival Heater OFF		OFF	N/A	N/A	P
3.2.4.3.3.3 Module Power Connect	Module Power	✓	Connect	28.09V 2.25A	+28 V DC current is between 0.5 and 3.2 amps.	P
3.2.4.3.3.4 PLL Power	PLLO#2	✓	PLLO#2	N/A	N/A	P
	PLLO#1	✓	PLLO#1	N/A	N/A	P

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

Test Systems Engineer

Date



MAR 17 1999

Date

Customer Representative
(Flight Hardware Only)

Quality Control

Date

TEST DATA SHEET 15
Scanner Commands Verification (Paragraph 3.2.4.3.3.5, Step 1)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power	✓	CONNECT	P ↓
	2 Survival Heater	✓	OFF	
	3 Scanner A1 Power	✓	ON	
	4 Scanner A2 Power	✓	ON	
	5 Antenna Warm Cal Pos.	✓	NO	
	6 Antenna Cold Cal Pos.	✓	NO	
	7 Antenna NADIR Position	✓	NO	
	8 Antenna Full Scan	✓	YES	
	9 PLL Power	✓	PLL#1	
	10 Cold MSB	✓	0	
	11 Cold LSB	✓	0	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hargis
Test Systems Engineer

3/16/99
Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

Quality Control

3/14/99
Date

TEST DATA SHEET 16
Scanner Commands Verification (Paragraph 3.2.4.3.3.5, Step 2)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power	✓	CONNECT	P
	2 Survival Heater	✓	OFF	
	3 Scanner A1 Power	✓	OFF	
	4 Scanner A2 Power	✓	OFF	
	5 Antenna Warm Cal Pos.	✓	NO	
	6 Antenna Cold Cal Pos.	✓	NO	
	7 Antenna NADIR Position	✓	NO	
	8 Antenna Full Scan	✓	YES	
	9 PLL Power	✓	PLLO#1	
	10 Cold MSB	✓	0	
	11 Cold LSB	✓	0	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hight 3/16/99
Test Systems Engineer Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

7A 197 3/14/99
Quality Control Date

TEST DATA SHEET 17
Scanner Commands Verification (Paragraph 3.2.4.3.3.5, Step 3)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan ✓	1 Module Power	✓	CONNECT	P ↓ ✓
	2 Survival Heater	✓	OFF	
	3 Scanner A1 Power	✓	ON	
	4 Scanner A2 Power	✓	ON	
	5 Antenna Warm Cal Pos.	✓	NO	
	6 Antenna Cold Cal Pos.	✓	NO	
	7 Antenna NADIR Position	✓	NO	
	8 Antenna Full Scan	✓	YES	
	9 PLL Power	✓	PLLO#1	
	10 Cold MSB	✓	0	
	11 Cold LSB	✓	0	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hail 3/16/99
Test Systems Engineer Date

(Stamp) MAR 17 1999
Customer Representative Date
(Flight Hardware Only)

(Stamp) 3/16/99
Quality Control Date

TEST DATA SHEET 18
Scanner Positions Commands (Paragraph 3.2.4.3.3.6)

Test	Digital "B" Verification			Pass/Fail
	Step/Description		Observed	
Scanner Position Commands	1-Warm Cal.		✓	YES
	2-Cold Cal.	MSB	✓	0
	Pos.	LSB	✓	1
	3-Cold Cal.	MSB	✓	1
	Pos.	LSB	✓	0
	4-Cold Cal.	MSB	✓	1
	Pos.	LSB	✓	1
	5-Cold Cal.	MSB	✓	0
	Pos.	LSB	✓	0
	6-NADIR		✓	YES
	7-Warm Cal		✓	YES

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hail 3/16/99
Test Systems Engineer Date

MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

(24/197) 3/14/99
Quality Control Date

TEST DATA SHEET 19
Digital-A Data Output Full Scan Mode Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.1)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	17	*	
[III]	0005	Digital-B Data Byte 1	2	2	
	0006	Digital-B Data Byte 2	14	**	
	0007	Digital-B Data Byte 3	0	0	
	0008	Digital-B Data Byte 4	0	0	
* AMSU A1 Identification Words (data entered in decimal system)					
			Binary	Decimal	
	AMSU-A1 S/N 101		00000001	1	
	AMSU-A1 S/N 102		00000101	5	
	AMSU-A1 S/N 103		00001001	9	
	AMSU-A1 S/N 104		00001101	13	
	AMSU-A1 S/N 105		00010001	17	
	AMSU-A1 S/N 106		00010101	21	
	AMSU-A1 S/N 107		00011001	25	
	AMSU-A1 S/N 108		00011101	29	
	AMSU-A1 S/N 109		00100001	33	
** Required value = 14 when PLLO #1 is active; and = 6 when PLLO #2 is active.					
Circle Test: CPT LPT					
METSAT/AMSU-A1 System P/N IS-1331720			Shop Order: <u>373234</u>	S/N: <u>105</u>	
			<u>R. Haig</u>	<u>3/16/99</u>	Date
			Test Systems Engineer		
			<u>(3/16/99)</u>	<u>3/16/99</u>	Date
			Quality Control		
Customer Representative			Date		
(Flight Hardware Only)					

MSU A1-17 A1.EXE:62 FULL SCAN MODE
 5] DIGITAL A DATA ELEMENT 0000
 6] DIGITAL B DATA ELEMENT 00
 7] ANALOG DATA ELEMENT 00

COMMANDS
 9] MODULE POWER = CONNECT ANTENNA IN COLD CAL POSIT = NO [15]
 10] SURVIVAL HEATER POWER = OFF ANTENNA IN NADIR POSITION = NO [16]
 11] MODULE TOTALLY OFF = ON ANTENNA IN FULL SCAN MODE = YES [17]
 12] SCANNER A1 - 1 POWER = ON PLL POWER = PLLO # 1 [18]
 13] SCANNER A1 - 2 POWER = ON COLD CAL POSITION MSB = ZERO [19]
 14] ANTENNA IN WARM CAL POSIT = NO COLD CAL POSITION LSB = ZERO [20]

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 3

TDS 19



ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE BYTE 1	11111111	572	SCENE DATA BP 17	CH 8
2	SYNC SEQUENCE BYTE 2	11111111	574		CH 9
3	SYNC SEQUENCE BYTE 3	11111111	576		CH 10
4	UNIT ID AND SERIAL NO	00010001	578		CH 11
5	DIGITAL B DATA BYTE 1	00000010	580		CH 12
6	DIGITAL B DATA BYTE 2	00001110	582		CH 13
7	DIGITAL B DATA BYTE 3	00000000	584		CH 14
8	DIGITAL B DATA BYTE 4	00000000	586		CH 15
10	REFLECTOR 1 POSITION	1621227	588	REFLECTOR 1 POSITION 18	2609
12	REFLECTOR 2 POSITION	1621227	590	REFLECTOR 2 POSITION 18	2410
14	REFL 1 POS 1	1621227	592	REFL 1 POS 18 2ND LOOK	2603
16	REFL 2 POS 1	1633333	594	REFL 2 POS 18 2ND LOOK	2405
18	SCENE DATA BP 1	16814598	596	SCENE DATA BP 18	16332
20		171128	598		16807
22		16873	600		17124
24		16494	602		16877
26		16513	604		16505
28		17669	606		16506
30		17060	608		17671
32		19280	610		17062
34		19148	612		19254
36		18567	614		19218
38		20639	616		18656
40		16900	618		20727
42		16900	620		16905
44	REFLECTOR 1 POSITION	16364	622	REFLECTOR 1 POSITION 19	2758
46	REFLECTOR 2 POSITION	16364	624	REFLECTOR 2 POSITION 19	2560
48	REFL 1 POS 2	176	626	REFL 1 POS 19 2ND LOOK	2755
50	REFL 2 POS 2	16361	628	REFL 2 POS 19 2ND LOOK	2556
52	SCENE DATA BP 2	1633322	630	SCENE DATA BP 19	16331
54		168022	632		16799
56		171222	634		17121
58		16867	636		16872
60		16495	638		16496
62		16503	640		16502
64		17666	642		17669
66		17058	644		17062
68		19276	646		19269
70		19155	648		19151
72		18591	650		18578
74		20648	652		20661
76		16902	654		16903
78	REFLECTOR 1 POSITION	334	656	REFLECTOR 1 POSITION 20	2910
80	REFLECTOR 2 POSITION	130	658	REFLECTOR 2 POSITION 20	2710
82	REFL 1 POS 3	329	660	REFL 1 POS 20 2ND LOOK	2907
84	REFL 2 POS 3	129	662	REFL 2 POS 20 2ND LOOK	2708
86	SCENE DATA BP 3	16334	664	SCENE DATA BP 20	16333
88		16803	666		16798
90		17123	668		17121
92		16856	670		16872

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94		16496	CH 7		16496
96		16504	CH 8		16499
98		17668	CH 9		17662
100		17066	CH 10		17060
102		19282	CH 11		19272
104		19139	CH 12		19146
106		18572	CH 13		18602
108		20619	CH 14		20651
110		16902	CH 15		16902
112	REFLECTOR 1 POSITION	483	REFLECTOR 1 POSITION 21		3064
114	REFLECTOR 2 POSITION	284	REFLECTOR 2 POSITION 21		2864
116	REFL 1 POS 4	480	REFL 1 POS 21 2ND LOOK		3059
118	REFL 2 POS 4	280	REFL 2 POS 21 2ND LOOK		2860
120	SCENE DATA BP 4	16331	SCENE DATA BP 21		16331
122		16803	CH 3		16797
124		17116	CH 4		17122
126		16874	CH 5		16872
128		16499	CH 6		16496
130		16501	CH 7		16502
132		17668	CH 8		17663
134		17073	CH 9		17062
136		19292	CH 10		19276
138		19123	CH 11		19158
140		18538	CH 12		18600
142		20598	CH 13		20632
144		16906	CH 14		16902
146	REFLECTOR 1 POSITION	635	REFLECTOR 1 POSITION 22		3210
148	REFLECTOR 2 POSITION	436	REFLECTOR 2 POSITION 22		3014
150	REFL 1 POS 5	632	REFL 1 POS 22 2ND LOOK		3209
152	REFL 2 POS 5	432	REFL 2 POS 22 2ND LOOK		3010
154	SCENE DATA BP 5	16333	SCENE DATA BP 22		16327
156		16795	CH 3		16797
158		17118	CH 4		17116
160		16877	CH 5		16874
162		16516	CH 6		16492
164		16505	CH 7		16503
166		17673	CH 8		17666
168		17046	CH 9		17061
170		19275	CH 10		19269
172		19194	CH 11		19159
174		18625	CH 12		18595
176		20713	CH 13		20691
178		16906	CH 14		16902
180	REFLECTOR 1 POSITION	788	REFLECTOR 1 POSITION 23		3365
182	REFLECTOR 2 POSITION	588	REFLECTOR 2 POSITION 23		3166
184	REFL 1 POS 6	784	REFL 1 POS 23 2ND LOOK		3361
186	REFL 2 POS 6	584	REFL 2 POS 23 2ND LOOK		3163
188	SCENE DATA BP 6	16333	SCENE DATA BP 23		16331
190		16796	CH 3		16801
192		17121	CH 4		17119
			CH 5		

LEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
194	CH	16864	772	REFLECTOR 1 POSITION	16872
196	CH	16518	774	REFLECTOR 2 POSITION	16498
198	CH	16503	776	REFL 1 POS	16498
200	CH	17671	778	REFL 2 POS	17665
202	CH	17039	780	SCENE DATA	17063
204	CH	19275	782	BP	19283
206	CH	19225	784		19149
208	CH	18674	786		18590
210	CH	20748	788		20639
212	CH	16906	790		16902
214	CH	938	792		3519
216	CH	740	794		3320
218	CH	935	796		3514
220	CH	735	798		3315
222	CH	16335	800		16330
224	CH	16802	802		16796
226	CH	17121	804		17122
228	CH	16868	806		16876
230	CH	16499	808		16491
232	CH	16501	810		16502
234	CH	17669	812		17665
236	CH	17050	814		17058
238	CH	19277	816		19270
240	CH	19174	818		19155
242	CH	18606	820		18602
244	CH	20679	822		20666
246	CH	16905	824		16902
248	CH	1091	826		3668
250	CH	892	828		3469
252	CH	1086	830		3665
254	CH	887	832		3466
256	CH	16330	834		16331
258	CH	16799	836		16799
260	CH	17122	838		17116
262	CH	16869	840		16873
264	CH	16501	842		16497
266	CH	17666	844		16503
268	CH	17061	846		17662
270	CH	19226	848		17064
272	CH	19177	850		19271
274	CH	18611	852		19157
276	CH	20702	854		18593
278	CH	16901	856		20664
280	CH	1245	858		16903
282	CH	1043	860		3821
284	CH	1239	862		3622
286	CH	1039	864		3817
288	CH	16332	866		3618
290	CH	16797	868		16330
292	CH		870		16795

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
294	CH 5	17122	872	CH 5	17119
296	CH 6	16870	874	CH 6	16872
298	CH 7	16496	876	CH 7	16497
300	CH 8	16504	878	CH 8	16500
302	CH 9	17665	880	CH 9	17663
304	CH 10	17058	882	CH 10	17053
306	CH 11	19263	884	CH 11	19271
308	CH 12	19162	886	CH 12	19167
310	CH 13	18603	888	CH 13	18587
312	CH 14	20681	890	CH 14	20673
314	CH 15	16903	892	CH 15	16903
316	REFLECTOR 1 POSITION 10	13955	894	REFLECTOR 1 POSITION 27	3975
318	REFLECTOR 2 POSITION 10	1194	896	REFLECTOR 2 POSITION 27	3774
320	REFL 1 POS 10 2ND LOOK	1390	898	REFL 1 POS 27 2ND LOOK	3968
322	REFL 2 POS 10 2ND LOOK	1191	900	REFL 2 POS 27 2ND LOOK	3770
324	SCENE DATA BP 10	16333	902	SCENE DATA BP 27	16339
326	CH 3	16797	904	CH 3	16797
328	CH 4	17124	906	CH 4	17125
330	CH 5	16877	908	CH 5	16875
332	CH 6	16495	910	CH 6	16494
334	CH 7	16503	912	CH 7	16506
336	CH 8	17662	914	CH 8	17666
338	CH 9	17062	916	CH 9	17058
340	CH 10	19276	918	CH 10	19275
342	CH 11	19145	920	CH 11	19163
344	CH 12	18574	922	CH 12	18584
346	CH 13	20641	924	CH 13	20655
348	CH 14	16901	926	CH 14	16903
350	CH 15	1545	928	CH 15	4125
352	REFLECTOR 1 POSITION 11	1346	930	REFLECTOR 1 POSITION 28	3925
354	REFLECTOR 2 POSITION 11	1542	932	REFLECTOR 2 POSITION 28	4120
356	REFL 1 POS 11 2ND LOOK	1342	934	REFL 1 POS 28 2ND LOOK	3920
358	REFL 2 POS 11 2ND LOOK	16333	936	REFL 2 POS 28 2ND LOOK	16340
360	SCENE DATA BP 11	16795	938	SCENE DATA BP 28	16803
362	CH 3	17117	940	CH 3	17128
364	CH 4	16874	942	CH 4	16874
366	CH 5	16496	944	CH 5	16495
368	CH 6	16502	946	CH 6	16505
370	CH 7	17669	948	CH 7	17666
372	CH 8	17059	950	CH 8	17063
374	CH 9	19274	952	CH 9	19277
376	CH 10	19154	954	CH 10	19151
378	CH 11	18588	956	CH 11	18590
380	CH 12	20640	958	CH 12	20675
382	CH 13	16901	960	CH 13	16898
384	CH 14	1698	962	CH 14	4275
386	CH 15	1499	964	CH 15	4076
388	REFLECTOR 1 POSITION 12	1694	966	REFLECTOR 1 POSITION 29	4272
390	REFLECTOR 2 POSITION 12	1495	968	REFLECTOR 2 POSITION 29	4073
392	REFL 1 POS 12 2ND LOOK	16332	970	REFL 1 POS 29 2ND LOOK	16342
	REFL 2 POS 12 2ND LOOK			REFL 2 POS 29 2ND LOOK	
	SCENE DATA BP 12			SCENE DATA BP 29	

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
394	CH 4	16798	972	CH 4	16812
396	CH 5	17120	974	CH 5	17150
398	CH 6	16868	976	CH 6	16874
400	CH 7	16493	978	CH 7	16494
402	CH 8	16500	980	CH 8	16512
404	CH 9	17664	982	CH 9	17663
406	CH 10	17060	984	CH 10	17067
408	CH 11	19267	986	CH 11	19275
410	CH 12	19142	988	CH 12	19151
412	CH 13	18592	990	CH 13	18581
414	CH 14	20665	992	CH 14	20618
416	CH 15	16900	994	CH 15	16903
418	REFLECTOR 1 POSITION 13	1848	996	REFLECTOR 1 POSITION 30	4429
420	REFLECTOR 2 POSITION 13	1649	998	REFLECTOR 2 POSITION 30	4226
422	REFL 1 POS 13	1845	1000	REFL 1 POS 30	4424
424	REFL 2 POS 13	1645	1002	REFL 2 POS 30	4224
426	SCENE DATA BP 13	16334	1004	SCENE DATA BP 30	16330
428	CH 3	16808	1006	CH 3	16795
430	CH 4	17124	1008	CH 4	17121
432	CH 5	16872	1010	CH 5	16874
434	CH 6	16513	1012	CH 6	16493
436	CH 7	16505	1014	CH 7	16503
438	CH 8	17672	1016	CH 8	17665
440	CH 9	17062	1018	CH 9	17055
442	CH 10	19244	1020	CH 10	19277
444	CH 11	19194	1022	CH 11	19143
446	CH 12	18638	1024	CH 12	18585
448	CH 13	20702	1026	CH 13	20652
450	CH 14	16905	1028	CH 14	16900
452	REFLECTOR 1 POSITION 14	2002	1030	REFLECTOR 1 COLD CAL POS	6021
454	REFLECTOR 2 POSITION 14	1800	1032	REFLECTOR 2 COLD CAL POS	5820
456	REFL 1 POS 14	1997	1034	REFL 1 COLD CAL 2ND LOOK	6021
458	REFL 2 POS 14	1798	1036	REFL 2 COLD CAL 2ND LOOK	5820
460	SCENE DATA BP 14	16333	1038	COLD CAL DATA 1	16331
462	CH 3	16808	1040	CH 3	16795
464	CH 4	17119	1042	CH 4	17121
466	CH 5	16876	1044	CH 5	16876
468	CH 6	16503	1046	CH 6	16492
470	CH 7	16504	1048	CH 7	16504
472	CH 8	17674	1050	CH 8	17666
474	CH 9	17070	1052	CH 9	17058
476	CH 10	19299	1054	CH 10	19272
478	CH 11	19147	1056	CH 11	19151
480	CH 12	18559	1058	CH 12	18588
482	CH 13	20608	1060	CH 13	20641
484	CH 14	16905	1062	CH 14	16901
486	REFLECTOR 1 POSITION 15	2154	1064	COLD CAL DATA 2	16333
488	REFLECTOR 2 POSITION 15	1955	1066	CH 15	16797
490	REFL 1 POS 15	2148	1068	CH 15	17122
492	REFL 2 POS 15	1950	1070	CH 15	16874

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
494	SCENE DATA BP 15	16333	1072		16491
496		16801	1074		16500
498		17126	1076		17663
500		16873	1078		17064
502		16512	1080		19267
504		16505	1082		19156
506		17670	1084		18584
508		17051	1086		20664
510		19291	1088		16901
512		19157	1182	REFLECTOR 1 WARM CAL POS	10419
514		18605	1184	REFLECTOR 2 WARM CAL POS	10219
516		20696	1186	REFL 1 WARM CAL 2ND LOOK	10419
518		16904	1188	REFL 2 WARM CAL 2ND LOOK	10219
520	REFLECTOR 1 POSITION 16	2302	1190	WARM CAL DATA 1	16331
522	REFLECTOR 2 POSITION 16	2104	1192		16796
524	REFL 1 POS 16	2300	1194		17113
526	REFL 2 POS 16	2101	1196		16870
528	SCENE DATA BP 16	16340	1198		16495
530		16802	1200		16494
532		17145	1202		17658
534		16883	1204		17058
536		16523	1206		19266
538		16510	1208		19153
540		17675	1210		18586
542		17046	1212		20643
544		19321	1214		16897
546		19189	1216	WARM CAL DATA 2	16325
548		18626	1218		16790
550		20675	1220		17112
552		16906	1222		16868
554	REFLECTOR 1 POSITION 17	2455	1224		16489
556	REFLECTOR 2 POSITION 17	2257	1226		16494
558	REFL 1 POS 17	2452	1228		17661
560	REFL 2 POS 17	2253	1230		17053
562	SCENE DATA BP 17	16332	1232		19267
564		16797	1234		19147
566		17126	1236		18585
568		16869	1238		20638
570		16500	1240		16898

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE	DEG C
1090	SCAN MOTOR A1-1	16342	20.23	
1092	SCAN MOTOR A1-2	16596	20.30	
1094	FEEDHORN A1-1	16890	20.51	
1096	FEEDHORN A1-2	17147	19.58	
1098	RF MUX A1-1	16935	21.14	
1100	RF MUX A1-2	17016	21.56	
1102	LOCAL OSCILLATOR CHANNEL 3	17948	23.09	
1104	LOCAL OSCILLATOR CHANNEL 4	18075	23.25	
1106	LOCAL OSCILLATOR CHANNEL 5	18056	22.97	
1108	LOCAL OSCILLATOR CHANNEL 6	17473	22.25	
1110	LOCAL OSCILLATOR CHANNEL 7	17500	22.21	
1112	LOCAL OSCILLATOR CHANNEL 8	17666	22.90	
1114	LOCAL OSCILLATOR CHANNEL 15	17535	23.27	
1116	PLL LO #2 CHANNELS 9 THROUGH 14	16949	21.88	
1118	PLL LO #1 CHANNELS 9 THROUGH 14	18370	24.35	
1120	SPARE (NOT USED)	32767	52.86	
1122	MIXER/IF AMPLIFIER CHANNEL 3	17536	21.99	
1124	MIXER/IF AMPLIFIER CHANNEL 4	17193	22.10	
1126	MIXER/IF AMPLIFIER CHANNEL 5	17314	22.06	
1128	MIXER/IF AMPLIFIER CHANNEL 6	17305	21.76	
1130	MIXER/IF AMPLIFIER CHANNEL 7	17297	21.86	
1132	MIXER/IF AMPLIFIER CHANNEL 8	17080	22.11	
1134	MIXER/IF AMPLIFIER CH 9 THRU 14	16706	21.39	
1136	MIXER/IF AMPLIFIER CHANNEL 15	17722	23.16	
1138	IF AMPLIFIER CHANNEL 11 THRU 14	17483	22.50	
1140	IF AMPLIFIER CHANNEL 9	17892	22.50	
1142	IF AMPLIFIER CHANNEL 10	17500	22.69	
1144	IF AMPLIFIER CHANNEL 11	17150	21.49	
1146	DC/DC CONVERTER	18854	24.60	
1148	IF AMPLIFIER CHANNEL 13	17337	21.58	
1150	IF AMPLIFIER CHANNEL 14	16953	21.46	
1152	IF AMPLIFIER CHANNEL 12	16924	21.40	
1154	RF SHELF A1-1	17499	22.20	
1156	RF SHELF A1-2	17229	21.85	
1158	DETECTOR/PREAMPLIFIER ASSEMBLY	16818	20.60	
1160	A1-1 WARM LOAD 1	21256	19.98	
1162	A1-1 WARM LOAD 2	21462	20.03	
1164	A1-1 WARM LOAD 3	21505	20.04	
1166	A1-1 WARM LOAD 4	21214	20.05	
1168	A1-1 WARM LOAD CENTER	21397	20.09	
1170	A1-2 WARM LOAD 1	21618	20.15	
1172	A1-2 WARM LOAD 2	21446	20.12	
1174	A1-2 WARM LOAD 3	21476	20.18	
1176	A1-2 WARM LOAD 4	21407	20.18	
1178	A1-2 WARM LOAD CENTER	21274	20.04	
1180	TEMP SENSOR REFERENCE VOLTAGE	24881		

DESCRIPTION

STATUS

STATUS

STATUS

SCANNER A1-1 POWER	ON		ON
SCANNER A1-2 POWER	ON		ON
PLL POWER	PLLO # 1	PLLO # 1	PLLO # 1
ANTENNA IN WARM CAL POSITION MODE	NO	NO	NO
ANTENNA IN COLD CAL POSITION MODE	NO	NO	NO
ANTENNA IN NADIR POSITION MODE	NO	NO	NO
ANTENNA IN FULL SCAN MODE	YES	YES	YES
SURVIVAL HEATER POWER	OFF	OFF	OFF
MODULE POWER	CONNECT	CONNECT	CONNECT
COLD CAL POSITION MSB	ZERO	ZERO	ZERO
COLD CAL POSITION LSB	ZERO	ZERO	ZERO

ANALOG DATA

DESCRIPTION

VALUE

DEG C

VALUE

DEG C

VALUE

DEG C

A1-1 SCANNER MOTOR TEMPERATURE	214	24.9	214	24.9	214	24.9
A1-2 SCANNER MOTOR TEMPERATURE	214	24.5	214	24.5	214	24.5
A1-1 RF SHELF TEMPERATURE	214	22.0	214	22.0	214	22.0
A1-2 RF SHELF TEMPERATURE	214	21.5	214	21.5	214	21.5
A1-1 WARM LOAD TEMPERATURE	214	23.8	214	23.8	214	23.8
A1-2 WARM LOAD TEMPERATURE	214	23.9	214	23.9	214	23.9

DESCRIPTION

VALUE

AMPS/
VOLTS

VALUE

AMPS/
VOLTS

VALUE

AMPS/
VOLTS

A1-1 ANTENNA DRIVE MOTOR CURRENT (AVRG)	100	46.60	100	46.60	100	46.60
A1-2 ANTENNA DRIVE MOTOR CURRENT (AVRG)	94	43.80	93	43.34	94	43.80
SIGNAL PROCESSING +15 VDC	168	15.00	168	15.00	168	15.00
ANTENNA DRIVE +15 VDC	171	15.01	171	15.01	170	14.92
SIGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00	150	-15.00
ANTENNA DRIVE -15 VDC	149	-14.95	149	-14.95	149	-14.95
RECEIVER AMPLIFIER +8 VDC	157	8.05	157	8.05	157	8.05
SIGNAL PROCESSOR +5 VDC	143	5.07	143	5.07	143	5.07
ANTENNA DRIVE +5 VDC	144	5.05	144	5.05	143	5.02
RECEIVER MIXER/IF +10 VDC	167	10.03	167	10.03	167	10.03
PHASE LOCK LOOP (CHANNEL 9/14)	167	14.99	167	14.99	167	14.99
PHASE LOCK LOOP (CHANNEL 9/14)	142	-14.90	142	-14.90	142	-14.90
L.O. VOLTAGE (CHANNEL 8)	172	10.00	172	10.00	172	10.00
L.O. VOLTAGE (CHANNEL 7)	170	10.06	171	10.11	171	10.11
L.O. VOLTAGE (CHANNEL 6)	173	10.00	173	10.00	173	10.00
L.O. VOLTAGE (CHANNEL 3)	173	10.00	173	10.00	173	10.00
L.O. VOLTAGE (CHANNEL 4)	173	10.00	173	10.00	173	10.00
L.O. VOLTAGE (CHANNEL 5)	172	10.17	172	10.17	172	10.17
PLLO # 2 LOCK DETECT	4	0.08	4	0.08	4	0.08
PLLO # 1 LOCK DETECT	216	4.32	216	4.32	216	4.32
L.O. VOLTAGE (CHANNEL 15)	167	14.91	167	14.91	167	14.91

PRT TEMPERATURES

VARIABLE TARGET

A1-1		A1-2	
NO.	DEG K	NO.	DEG K
615	42.00	601	14.00
616	43.00	602	15.00
617	44.00	603	16.00
618	45.00	604	17.00
619	46.00	605	18.00
620	47.00	606	19.00
621	48.00	607	20.00
622	49.00	608	21.00
623	50.00	609	22.00
624	51.00	610	23.00
625	52.00	611	24.00
626	53.00	612	25.00
627	57.00	613	69.00
628	68.00	614	70.00
629	71.00	630	72.00
631	26.00	632	27.00

BASEPLATE

THERMOCOUPLE TEMPERATURES

FIXED TARGET SHROUD

VARIABLE TARGET SHROUD

FIXED TARGET N2

VARIABLE TARGET N2

HEATER N2

FIXED TARGET FLOW METER
VARIABLE TARGET FLOW METER
BASEPLATE HEATER N2
BASEPLATE N2
BASEPLATE FLOW METER
ADJUNCT RADIATORS

A1-1		A1-2	
NO.	DEG K	NO.	DEG K
558	5.00	537	34.00
559	6.00	538	35.00
550	7.00	524	36.00
551	8.00	525	37.00
506	57.00	502	30.00
507	58.00	503	31.00
516	59.00	511	32.00
517	60.00	512	33.00
514	1.00	509	38.00
515	2.00	510	39.00
508	63.00	504	61.00
518	64.00	513	62.00
519	3.00	520	4.00
521	9.00	522	10.00
523	65.00	577	74.00
525	73.00	581	76.00
579	75.00		



TEST DATA SHEET 20
Reflector Positions Section [IV] (Paragraph 3.2.4.3.4.1)

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0014				0016			
02	0048				0050			
03	0082				0084			
04	0116				0118			
05	0150				0152			
06	0184				0186			
07	0218				0220			
08	0252				0254			
09	0286				0288			
10	0320				0322			
11	0354				0356			
12	0388				0390			
13	0422				0424			
14	0456				0458			
15	0490				0492			
16	0524				0526			
17	0558				0560			
18	0592				0594			
19	0626				0628			
20	0660				0662			
21	0694				0696			
22	0728				0730			
23	0762				0764			
24	0796				0798			
25	0830				0832			
26	0864				0866			
27	0890				0900			
28	0932				0934			
29	0966				0968			
30	1000				1002			
CC	1034				1036			
WC	1186				1188			

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

** Required range for instrument serial number from TDS 6 of AE-26002/1 ± 10 counts. Rewriting range on this data sheet is optional.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

SN: 105

Test Systems Engineer

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date



AMSU A1-17 A1.EXE:62 FULL SCAN MODE P1 16-MAR-99 08:00:21 SCAN NUMBER 107
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

		REFLECTOR POSITIONS										
		1					2					
BP	LOOK	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	26			9	1246	1239	17	2454	2452	25	3668	3665
2	179			10	1395	1390	18	2610	2603	26	3820	3817
3	334			11	1545	1542	19	2759	2755	27	3974	3968
4	483			12	1697	1694	20	2910	2907	28	4125	4120
5	635			13	1848	1845	21	3062	3059	29	4274	4272
6	789			14	2001	1997	22	3211	3209	30	4429	4424
7	938			15	2153	2148	23	3365	3361	CC	6021	6021
8	1091			16	2303	2305	24	3519	3514	WC	10419	10419
[21] UP		[22] DOWN										

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

TDS20

AMSU A1-17 A1.EXE:62 FULL SCAN MODE P1 16-MAR-99 08:00:28 SCAN NUMBER 108

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

		REFLECTOR POSITIONS							
		2				2			
BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	
1	16212	16212	9	1043	1040	17	2258	2253	
2	16365	16361	10	1194	1191	18	2409	2405	
3	130	127	11	1346	1343	19	2559	2556	
4	284	280	12	1499	1495	20	2711	2708	
5	437	432	13	1649	1645	21	2863	2860	
6	588	585	14	1802	1798	22	3015	3010	
7	739	736	15	1955	1949	23	3167	3163	
8	892	887	16	2105	2101	24	3321	3315	
[21] UP				[22] DOWN					

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2

TEST DATA SHEET 21
Digital-A Data Output Radiometer Data Section [V] (Paragraph 3.2.4.3.4.1)

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
01	0018			P	0030			P
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038				1050			
WC	1190			✓	1202			✓

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

** Required = 16,500 ± 4000 counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

SN: 105

Test Systems Engineer

Date



MAR 17 1999



3/16/99

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date



[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA

BP		DATA		BP		DATA		BP		DATA	
CHANNEL 3											
1	16316	9	16305	17	16310	25	16308				
2	16306	10	16310	18	16309	26	16300				
3	16307	11	16309	19	16309	27	16311				
4	16310	12	16303	20	16308	28	16311				
5	16301	13	16317	21	16299	29	16320				
6	16302	14	16307	22	16309	30	16306				
7	16307	15	16312	23	16309	CC	16310				
8	16311	16	16315	24	16313	WC	16300				
[22] DOWN											

[21] UP

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL
SELECT TOUCHSCREEN BUTTON 2 [1] RETURN

TDS 2-1

AMSU A1-17 A1.EXE:62 FULL SCAN MODE P1 16-MAR-99 08:00:05 SCAN NUMBER 105
[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA							
CHANNEL 9							
BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	17617	9	17618	17	17628	25	17616
2	17617	10	17618	18	17623	26	17618
3	17620	11	17615	19	17619	27	17617
4	17627	12	17619	20	17616	28	17615
5	17620	13	17624	21	17618	29	17616
6	17626	14	17624	22	17617	30	17615
7	17614	15	17625	23	17617	CC	17619
8	17620	16	17633	24	17619	WC	17611
	1	22	DOWN				

[21] UP

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL
SELECT TOUCHSCREEN BUTTON 2 [1] RETURN

TEST DATA SHEET 22 (Sheet 1 of 2)
Full Scan Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.1)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	P
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***		25 ± 15	
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	✓

* Value is from the STE printout sheets. Copying data to this sheet is optional.

** For S/N 101 through 104.

*** For S/N 105 and up.

(Continued on Sheet 2)

TEST DATA SHEET 22 (Sheet 2 of 2)
Full Scan Mode Temperature Sensors Section [VI (Paragraph 3.2.4.3.4.1)]

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	P
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	✓
1180	Temp Sensor Ref Voltage Count		24882	P

- * Value is from the STE printout sheets. Copying data to this sheet is optional.
** = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

R. Haig
Test Systems Engineer

Date

(Signature)
Customer Representative
(Flight Hardware Only)

Date

(Signature)
Quality Control

Date

MAR 17 1999

3/16/99

[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

NO	DIGITAL A TEMPERATURES 1 TO 16			
	DATA	TEMP C	NO	DATA
1	SCAN MOTOR A1-1	16391	9	LO CHANNEL 5
2	SCAN MOTOR A1-2	16663	10	LO CHANNEL 6
3	FEEDHORN A1-1	17038	11	LO CHANNEL 7
4	FEEDHORN A1-2	17377	12	LO CHANNEL 8
5	RF MUX A1-1	17226	13	LO CHANNEL 15
6	RF MUX A1-2	17380	14	PLLO #2 CH 9/14
7	LO CHANNEL 3	18374	15	PLLO #1 CH 9/14
8	LO CHANNEL 4	18511	16	PLLO REFERENCE
[21] UP		[22] DOWN		

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL
SELECT TOUCHSCREEN BUTTON 2 [1] RETURN

7DS22

AMSU A1-+7 A1.EXE:62 FULL SCAN MODE P1 16-MAR-99 08:00:56 SCAN NUMBER 111
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

NO	DIGITAL A TEMPERATURES 17 TO 32		DATA	TEMP C		
	DATA	TEMP C				
17	MIXER IF CH 3	17909	22.71	25 IF AMP CH 11/14	17982	23.46
18	MIXER IF CH 4	17582	22.84	26 IF AMP CH 9	18397	23.46
19	MIXER IF CH 5	17698	22.79	27 IF AMP CH 10	18007	23.66
20	MIXER IF CH 6	17587	22.30	28 IF AMP CH 11	17413	21.99
21	MIXER IF CH 7	17628	22.49	29 DC/DC CONVERTER	19496	25.84
22	MIXER IF CH 8	17479	22.86	30 IF AMP CH 13	17598	22.07
23	MIXER IF CH 9/14	16975	21.90	31 IF AMP CH 14	17214	21.96
24	MIXER IF CH 15	18103	23.89	32 IF AMP CH 12	17184	21.89
[21]	UP		[22] DOWN			

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL
 SELECT TOUCHSCREEN BUTTON 2 [1] RETURN

AMSU A1-17 A1.EXE:62 FULL SCAN MODE P1 16-MAR-99 08:01:05 SCAN NUMBER 113
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES 31 TO 46			
NO	DATA	TEMP C	NO
31	IF AMP CH 14	17227	39
32	IF AMP CH 12	17200	40
33	RF SHELF A1-1	17855	41
34	RF SHELF A1-2	17631	42
35	DETECTOR/PREAMP	17034	43
36	A1-1 WARM LOAD 1	21269	44
37	A1-1 WARM LOAD 2	21473	45
38	A1-1 WARM LOAD 3	21518	THERMAL REFERENCE
[21] UP			
			[22] DOWN

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2



TEST DATA SHEET 23
Digital-A Data Output Warm Cal Mode Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.2)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	17	*	
[III]	0005	Digital-B Data Byte 1	4	4	
	0006	Digital-B Data Byte 2	14	14	
	0007	Digital-B Data Byte 3	0	0	
	0008	Digital-B Data Byte 4	0	0	↓

AMSU A1 Identification Words (data entered in decimal system)	Binary	Decimal
AMSU-A1 S/N 101	00000001	1
AMSU-A1 S/N 102	00000101	5
AMSU-A1 S/N 103	00001001	9
AMSU-A1 S/N 104	00001101	13
AMSU-A1 S/N 105	00010001	17
AMSU-A1 S/N 106	00010101	21
AMSU-A1 S/N 107	00011001	25
AMSU-A1 S/N 108	00011101	29
AMSU-A1 S/N 109	00100001	33

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: 373234 S/N: 105

R. Hargis 3/16/99
Test Systems Engineer Date

MAR 17 1999

Customer Representative (Flight Hardware Only) Date Quality Control Date



[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

COMMANDS
[9] MODULE POWER = CONNECT ANTENNA IN COLD CAL POSIT = NO [15]
[10] SURVIVAL HEATER POWER = OFF ANTENNA IN NADIR POSITION = NO [16]
[11] MODULE TOTALLY OFF = ON ANTENNA IN FULL SCAN MODE = NO [17]
[12] SCANNER A1 - 1 POWER = ON PLL POWER = PLL0 # 1 [18]
[13] SCANNER A1 - 2 POWER = ON COLD CAL POSITION MSB = ZERO [19]
[14] ANTENNA IN WARM CAL POSIT = YES COLD CAL POSITION LSB = ZERO [20]
POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 3

7DS23



ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE	11111111	572	WARM CAL SAMPLE 17	16334
2	SYNC SEQUENCE	11111111	574		17442
3	SYNC SEQUENCE	11111111	576		16832
4	UNIT ID AND SERIAL NO	00010001	578		18750
5	DIGITAL B DATA	00000100	580		18642
6	DIGITAL B DATA	00001110	582		18081
7	DIGITAL B DATA	00000000	584		20043
8	DIGITAL B DATA	00000000	586		16758
10	REFLECTOR 1 POSITION	10411	588	REFLECTOR 1 POSITION 18	10411
12	REFLECTOR 2 POSITION	10212	590	REFLECTOR 2 POSITION 18	10212
14	REFL 1 POS	10411	592	REFL 1 POS 18 2ND LOOK	10411
16	REFL 2 POS	10212	594	REFL 2 POS 18 2ND LOOK	10212
18	WARM CAL SAMPLE 1	16186	596	WARM CAL SAMPLE 18	16178
20		16611	598		16612
22		16952	600		16952
24		16781	602		16779
26		16330	604		16330
28		16335	606		16336
30		17442	608		17442
32		16836	610		16834
34		18748	612		18747
36		18644	614		18640
38		18085	616		18065
40		20049	618		20070
42		16758	620		16757
44	REFLECTOR 1 POSITION	10411	622	REFLECTOR 1 POSITION 19	10411
46	REFLECTOR 2 POSITION	10212	624	REFLECTOR 2 POSITION 19	10212
48	REFL 1 POS	10411	626	REFL 1 POS 19 2ND LOOK	10411
50	REFL 2 POS	10212	628	REFL 2 POS 19 2ND LOOK	10212
52	WARM CAL SAMPLE 2	16178	630	WARM CAL SAMPLE 19	16175
54		16613	632		16613
56		16950	634		16951
58		16780	636		16778
60		16329	638		16332
62		16334	640		16337
64		17441	642		17444
66		16835	644		16833
68		18751	646		18753
70		18650	648		18637
72		18073	650		18076
74		20051	652		20056
76		16759	654		16758
78	REFLECTOR 1 POSITION	10411	656	REFLECTOR 1 POSITION 20	10411
80	REFLECTOR 2 POSITION	10212	658	REFLECTOR 2 POSITION 20	10212
82	REFL 1 POS	10411	660	REFL 1 POS 20 2ND LOOK	10411
84	REFL 2 POS	10212	662	REFL 2 POS 20 2ND LOOK	10212
86	WARM CAL SAMPLE 3	16181	664	WARM CAL SAMPLE 20	16177
88		16615	666		16615
90		16954	668		16949
92		16780	670		16778

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94		16331	672		16336
96		16337	674		16335
98		17442	676		17440
100		16833	678		16833
102		18756	680		18755
104		18647	682		18643
106		18082	684		18079
108		20049	686		20025
110		16757	688		16758
112	REFLECTOR 1 POSITION	10411	690	REFLECTOR 1 POSITION 21	10411
114	REFLECTOR 2 POSITION	10212	692	REFLECTOR 2 POSITION 21	10212
116	REFL 1 POS 4 2ND LOOK	10411	694	REFL 1 POS 21 2ND LOOK	10411
118	REFL 2 POS 4 2ND LOOK	10212	696	REFL 2 POS 21 2ND LOOK	10212
120	WARM CAL SAMPLE 4	16177	698	WARM CAL SAMPLE 21	16178
122		16611	700		16612
124		16953	702		16951
126		16781	704		16779
128		16336	706		16334
130		16335	708		16339
132		17437	710		17441
134		16833	712		16834
136		18752	714		18755
138		18643	716		18640
140		18077	718		18081
142		20051	720		20050
144		16756	722		16759
146	REFLECTOR 1 POSITION	10411	724	REFLECTOR 1 POSITION 22	10411
148	REFLECTOR 2 POSITION	10212	726	REFLECTOR 2 POSITION 22	10212
150	REFL 1 POS 5 2ND LOOK	10411	728	REFL 1 POS 22 2ND LOOK	10411
152	REFL 2 POS 5 2ND LOOK	10212	730	REFL 2 POS 22 2ND LOOK	10212
154	WARM CAL SAMPLE 5	16176	732	WARM CAL SAMPLE 22	16175
156		16614	734		16615
158		16949	736		16950
160		16780	738		16782
162		16330	740		16335
164		16336	742		16337
166		17443	744		17442
168		16837	746		16836
170		18747	748		18752
172		18655	750		18638
174		18083	752		18063
176		20051	754		20052
178		16758	756		16759
180	REFLECTOR 1 POSITION	10411	758	REFLECTOR 1 POSITION 23	10411
182	REFLECTOR 2 POSITION	10212	760	REFLECTOR 2 POSITION 23	10212
184	REFL 1 POS 6 2ND LOOK	10411	762	REFL 1 POS 23 2ND LOOK	10411
186	REFL 2 POS 6 2ND LOOK	10212	764	REFL 2 POS 23 2ND LOOK	10212
188	WARM CAL SAMPLE 6	16182	766	WARM CAL SAMPLE 23	16174
190		16613	768		16613
192		16953	770		16955

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
194	CH 6	16779	772	REFLECTOR 1 POSITION 24	10411
196	CH 7	16329	774	REFLECTOR 2 POSITION 24	10212
198	CH 8	16332	776	REFL 1 POS 24 2ND LOOK	10411
200	CH 9	17443	778	REFL 2 POS 24 2ND LOOK	10212
202	CH 10	16835	780	WARM CAL SAMPLE 24	16175
204	CH 11	18755	782	CH 3	16613
206	CH 12	18645	784	CH 4	16954
208	CH 13	18080	786	CH 5	16779
210	CH 14	20067	788	CH 6	16330
212	CH 15	16758	790	CH 7	16334
214	REFLECTOR 1 POSITION 7	10411	792	CH 8	17445
216	REFLECTOR 2 POSITION 7	10212	794	CH 9	16835
218	REFL 1 POS 7 2ND LOOK	10411	796	CH 10	18749
220	REFL 2 POS 7 2ND LOOK	10212	798	CH 11	18645
222	WARM CAL SAMPLE 7	16175	800	CH 12	18076
224	CH 3	16617	802	CH 13	20045
226	CH 4	16952	804	CH 14	16757
228	CH 5	16780	806	CH 15	10411
230	CH 6	16330	808	REFLECTOR 1 POSITION 25	10212
232	CH 7	16332	810	REFLECTOR 2 POSITION 25	10411
234	CH 8	17445	812	REFL 1 POS 25 2ND LOOK	10212
236	CH 9	16829	814	REFL 2 POS 25 2ND LOOK	16177
238	CH 10	18752	816	WARM CAL SAMPLE 25	16615
240	CH 11	18640	818	CH 3	16949
242	CH 12	18085	820	CH 4	16780
244	CH 13	20049	822	CH 5	16331
246	CH 14	16758	824	CH 6	16333
248	CH 15	10411	826	CH 7	17442
250	REFLECTOR 1 POSITION 8	10212	828	CH 8	16833
252	REFLECTOR 2 POSITION 8	10411	830	CH 9	18745
254	REFL 1 POS 8 2ND LOOK	10212	832	CH 10	18633
256	REFL 2 POS 8 2ND LOOK	16180	834	CH 11	18745
258	WARM CAL SAMPLE 8	16612	836	CH 12	18073
260	CH 3	16952	838	CH 13	20038
262	CH 4	16781	840	CH 14	16758
264	CH 5	16334	842	CH 15	10411
266	CH 6	16334	844	REFLECTOR 1 POSITION 26	10212
268	CH 7	17442	846	REFLECTOR 2 POSITION 26	10411
270	CH 8	16838	848	REFL 1 POS 26 2ND LOOK	10212
272	CH 9	18755	850	REFL 2 POS 26 2ND LOOK	16174
274	CH 10	18648	852	WARM CAL SAMPLE 26	16614
276	CH 11	18075	854	CH 3	
278	CH 12	20062	856	CH 4	
280	CH 13	16757	858		
282	CH 14	10411	860		
284	CH 15	10212	862		
286	REFLECTOR 1 POSITION 9	10212	864		
288	REFLECTOR 2 POSITION 9	10411	866		
290	REFL 1 POS 9 2ND LOOK	10212	868		
292	REFL 2 POS 9 2ND LOOK	16177	870		
	WARM CAL SAMPLE 9	16614			

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
294	CH 5	16952	872	CH 5	16953
296	CH 6	16783	874	CH 6	16779
298	CH 7	16331	876	CH 7	16333
300	CH 8	16334	878	CH 8	16337
302	CH 9	17437	880	CH 9	17441
304	CH 10	16839	882	CH 10	16835
306	CH 11	18750	884	CH 11	18755
308	CH 12	18642	886	CH 12	18646
310	CH 13	18081	888	CH 13	18092
312	CH 14	20045	890	CH 14	20041
314	CH 15	16756	892	CH 15	16757
316	REFLECTOR 1 POSITION 10	10411	894	REFLECTOR 1 POSITION 27	10411
318	REFLECTOR 2 POSITION 10	10212	896	REFLECTOR 2 POSITION 27	10212
320	REFL 1 POS 10 2ND LOOK	10411	898	REFL 1 POS 27 2ND LOOK	10411
322	REFL 2 POS 10 2ND LOOK	10212	900	REFL 2 POS 27 2ND LOOK	10212
324	WARM CAL SAMPLE 10	16173	902	WARM CAL SAMPLE 27	16183
326	CH 3	16615	904	CH 3	16609
328	CH 4	16953	906	CH 4	16954
330	CH 5	16779	908	CH 5	16779
332	CH 6	16335	910	CH 6	16331
334	CH 7	17438	912	CH 7	16335
336	CH 8	16836	914	CH 8	17440
338	CH 9	18751	916	CH 9	16829
340	CH 10	18640	918	CH 10	18748
342	CH 11	18074	920	CH 11	18638
344	CH 12	20064	922	CH 12	18076
346	CH 13	16759	924	CH 13	20052
348	CH 14	10411	926	CH 14	16758
350	CH 15	10212	928	CH 15	10411
352	REFLECTOR 1 POSITION 11	10212	930	REFLECTOR 1 POSITION 28	10212
354	REFL 1 POS 11 2ND LOOK	10411	932	REFL 1 POS 28 2ND LOOK	10411
356	REFL 2 POS 11 2ND LOOK	10212	934	REFL 2 POS 28 2ND LOOK	10212
358	WARM CAL SAMPLE 11	16180	936	WARM CAL SAMPLE 28	16179
360	CH 3	16614	938	CH 3	16612
362	CH 4	16951	940	CH 4	16950
364	CH 5	16783	942	CH 5	16776
366	CH 6	16331	944	CH 6	16335
368	CH 7	17443	946	CH 7	17443
370	CH 8	16832	948	CH 8	16837
372	CH 9	18757	950	CH 9	18749
374	CH 10	18640	952	CH 10	18645
376	CH 11	18081	954	CH 11	18075
378	CH 12	20082	956	CH 12	20066
380	CH 13	16757	958	CH 13	16757
382	CH 14	10411	960	CH 14	10411
384	CH 15	10212	962	CH 15	10212
386	REFLECTOR 1 POSITION 12	10212	964	REFLECTOR 1 POSITION 29	10212
388	REFL 1 POS 12 2ND LOOK	10411	966	REFL 1 POS 29 2ND LOOK	10411
390	REFL 2 POS 12 2ND LOOK	10212	968	REFL 2 POS 29 2ND LOOK	10212
392	WARM CAL SAMPLE 12	16176	970	WARM CAL SAMPLE 29	16176

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
394	CH 4	16613	972	CH 4	16617
396	CH 5	16951	974	CH 5	16950
398	CH 6	16783	976	CH 6	16782
400	CH 7	16334	978	CH 7	16332
402	CH 8	16332	980	CH 8	16338
404	CH 9	17442	982	CH 9	17443
406	CH 10	16834	984	CH 10	16832
408	CH 11	18758	986	CH 11	18752
410	CH 12	18650	988	CH 12	18643
412	CH 13	18068	990	CH 13	18077
414	CH 14	20048	992	CH 14	20041
416	CH 15	16759	994	CH 15	16757
418	REFLECTOR 1 POSITION 13	10411	996	REFLECTOR 1 POSITION 30	10411
420	REFLECTOR 2 POSITION 13	10212	998	REFLECTOR 2 POSITION 30	10212
422	REFL 1 POS 13 2ND LOOK	10411	1000	REFL 1 POS 30 2ND LOOK	10411
424	REFL 2 POS 13 2ND LOOK	10212	1002	REFL 2 POS 30 2ND LOOK	10212
426	WARM CAL SAMPLE 13	16183	1004	WARM CAL SAMPLE 30	16181
428	CH 3	16613	1006	CH 3	16612
430	CH 4	16950	1008	CH 4	16950
432	CH 5	16781	1010	CH 5	16782
434	CH 6	16331	1012	CH 6	16333
436	CH 7	16335	1014	CH 7	16334
438	CH 8	17442	1016	CH 8	17440
440	CH 9	16834	1018	CH 9	16833
442	CH 10	18752	1020	CH 10	18748
444	CH 11	18647	1022	CH 11	18635
446	CH 12	18077	1024	CH 12	18073
448	CH 13	20074	1026	CH 13	20034
450	CH 14	16757	1028	CH 14	16757
452	CH 15	10411	1030	REFLECTOR 1 COLD CAL POS	0E
454	REFLECTOR 2 POSITION 14	10212	1032	REFLECTOR 2 COLD CAL POS	0E
456	REFL 1 POS 14 2ND LOOK	10411	1034	REFL 1 COLD CAL 2ND LOOK	0E
458	REFL 2 POS 14 2ND LOOK	10212	1036	REFL 2 COLD CAL 2ND LOOK	0E
460	WARM CAL SAMPLE 14	16179	1038	COLD CAL DATA 1	0
462	CH 3	16616	1040	CH 3	0
464	CH 4	16950	1042	CH 4	0
466	CH 5	16777	1044	CH 5	0
468	CH 6	16330	1046	CH 6	0
470	CH 7	16333	1048	CH 7	0
472	CH 8	17443	1050	CH 8	0
474	CH 9	16832	1052	CH 9	0
476	CH 10	18758	1054	CH 10	0
478	CH 11	18646	1056	CH 11	0
480	CH 12	18075	1058	CH 12	0
482	CH 13	20054	1060	CH 13	0
484	CH 14	16758	1062	CH 14	0
486	CH 15	10411	1064	CH 15	0
488	REFLECTOR 1 POSITION 15	10212	1066	COLD CAL DATA 2	0
490	REFLECTOR 2 POSITION 15	10411	1068	CH 3	0
492	REFL 1 POS 15 2ND LOOK	10212	1070	CH 4	0
	REFL 2 POS 15 2ND LOOK	10212		CH 5	0

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE	DEG C
1090	SCAN MOTOR A1-1	16486	20.50	
1092	SCAN MOTOR A1-2	16964	21.00	
1094	FEEDHORN A1-1	17882	22.40	
1096	FEEDHORN A1-2	18658	22.46	
1098	RF MUX A1-1	18577	24.27	
1100	RF MUX A1-2	19197	25.73	
1102	LOCAL OSCILLATOR CHANNEL 3	20206	27.43	
1104	LOCAL OSCILLATOR CHANNEL 4	20369	27.67	
1106	LOCAL OSCILLATOR CHANNEL 5	20181	27.06	
1108	LOCAL OSCILLATOR CHANNEL 6	18616	24.45	
1110	LOCAL OSCILLATOR CHANNEL 7	19089	25.25	
1112	LOCAL OSCILLATOR CHANNEL 8	19842	27.10	
1114	LOCAL OSCILLATOR CHANNEL 15	19679	27.40	
1116	PLL LO #2 CHANNELS 9 THROUGH 14	18258	24.38	
1118	PLL LO #1 CHANNELS 9 THROUGH 14	21374	30.15	
1120	SPARE (NOT USED)	32767	52.86	
1122	MIXER/IF AMPLIFIER CHANNEL 3	19736	26.23	
1124	MIXER/IF AMPLIFIER CHANNEL 4	19424	26.38	
1126	MIXER/IF AMPLIFIER CHANNEL 5	19496	26.25	
1128	MIXER/IF AMPLIFIER CHANNEL 6	18877	24.78	
1130	MIXER/IF AMPLIFIER CHANNEL 7	19085	25.29	
1132	MIXER/IF AMPLIFIER CHANNEL 8	19330	26.41	
1134	MIXER/IF AMPLIFIER CH 9 THRU 14	18314	24.46	
1136	MIXER/IF AMPLIFIER CHANNEL 15	19650	26.86	
1138	IF AMPLIFIER CHANNEL 11 THRU 14	19700	26.79	
1140	IF AMPLIFIER CHANNEL 9	20136	26.81	
1142	IF AMPLIFIER CHANNEL 10	19757	27.03	
1144	IF AMPLIFIER CHANNEL 11	18712	24.48	
1146	DC/DC CONVERTER	21306	29.34	
1148	IF AMPLIFIER CHANNEL 13	18890	24.55	
1150	IF AMPLIFIER CHANNEL 14	18504	24.43	
1152	IF AMPLIFIER CHANNEL 12	18482	24.38	
1154	RF SHELF A1-1	19341	25.73	
1156	RF SHELF A1-2	19358	25.94	
1158	DETECTOR/PREAMPLIFIER ASSEMBLY	18030	22.92	
1160	A1-1 WARM LOAD 1	21415	20.30	
1162	A1-1 WARM LOAD 2	21613	20.32	
1164	A1-1 WARM LOAD 3	21662	20.35	
1166	A1-1 WARM LOAD 4	21368	20.36	
1168	A1-1 WARM LOAD CENTER	21551	20.39	
1170	A1-2 WARM LOAD 1	21993	20.89	
1172	A1-2 WARM LOAD 2	21820	20.86	
1174	A1-2 WARM LOAD 3	21855	20.92	
1176	A1-2 WARM LOAD 4	21781	20.91	
1178	A1-2 WARM LOAD CENTER	21646	20.78	
1180	TEMP SENSOR REFERENCE VOLTAGE	24884		

DESCRIPTION

STATUS

STATUS

STATUS

DESCRIPTION	STATUS	STATUS	STATUS
SCANNER A1-1 POWER	ON	ON	ON
SCANNER A1-2 POWER	ON	ON	ON
PLL POWER	ON	ON	ON
ANTENNA IN WARM CAL POSITION MODE	PLLO # 1	PLLO # 1	PLLO # 1
ANTENNA IN COLD CAL POSITION MODE	YES	YES	YES
ANTENNA IN NADIR POSITION MODE	NO	NO	NO
ANTENNA IN FULL SCAN MODE	NO	NO	NO
SURVIVAL HEATER POWER	NO	NO	NO
MODULE POWER	OFF	OFF	OFF
COLD CAL POSITION MSB	CONNECT	CONNECT	CONNECT
COLD CAL POSITION LSB	ZERO	ZERO	ZERO
	ZERO	ZERO	ZERO

ANALOG DATA

DESCRIPTION	VALUE	DEG C	VALUE	DEG C	VALUE	DEG C
A1-1 SCANNER MOTOR TEMPERATURE	214	24.9	214	24.9	214	24.9
A1-2 SCANNER MOTOR TEMPERATURE	214	24.5	214	24.5	214	24.5
A1-1 RF SHELF TEMPERATURE	214	22.0	214	22.0	214	22.0
A1-2 RF SHELF TEMPERATURE	215	22.9	215	22.9	215	22.9
A1-1 WARM LOAD TEMPERATURE	214	23.8	214	23.8	214	23.8
A1-2 WARM LOAD TEMPERATURE	214	23.9	214	23.9	214	23.9

DESCRIPTION

VALUE

AMPS/
VOLTS

VALUE

AMPS/
VOLTS

DESCRIPTION	VALUE	DEG C	VALUE	DEG C	VALUE	DEG C
A1-1 ANTENNA DRIVE MOTOR CURRENT (AVRG)	4	1.86	4	1.86	4	1.86
A1-2 ANTENNA DRIVE MOTOR CURRENT (AVRG)	4	1.86	4	1.86	4	1.86
SIGNAL PROCESSING +15 VDC	167	14.91	167	14.91	167	14.91
ANTENNA DRIVE +15 VDC	167	14.66	167	14.66	167	14.66
SIGNAL PROCESSING -15 VDC	149	-15.05	149	-15.05	149	-15.05
ANTENNA DRIVE -15 VDC	149	-14.95	149	-14.95	149	-14.95
RECEIVER AMPLIFIER +8 VDC	157	8.05	157	8.05	157	8.05
SIGNAL PROCESSOR +5 VDC	143	5.07	143	5.07	143	5.07
ANTENNA DRIVE +5 VDC	143	5.02	143	5.02	143	5.02
RECEIVER MIXER/IF +10 VDC	167	10.03	167	10.03	167	10.03
PHASE LOCK LOOP (CHANNEL 9/14)	167	14.99	167	14.99	167	14.99
PHASE LOCK LOOP (CHANNEL 9/14)	142	-14.90	142	-14.90	142	-14.90
L.O. VOLTAGE (CHANNEL 8)	172	10.00	172	10.00	172	10.00
L.O. VOLTAGE (CHANNEL 7)	170	10.06	170	10.06	170	10.06
L.O. VOLTAGE (CHANNEL 6)	173	10.00	173	10.00	173	10.00
L.O. VOLTAGE (CHANNEL 3)	173	10.00	173	10.00	173	10.00
L.O. VOLTAGE (CHANNEL 4)	173	10.00	173	10.00	173	10.00
L.O. VOLTAGE (CHANNEL 5)	171	10.11	171	10.11	171	10.11
PLLO # 2 LOCK DETECT	4	0.08	4	0.08	4	0.08
PLLO # 1 LOCK DETECT	218	4.36	218	4.36	218	4.36
L.O. VOLTAGE (CHANNEL 15)	167	14.91	167	14.91	167	14.91

PRT TEMPERATURES

VARIABLE TARGET

NO.	A1-1 DEG K	A1-2 DEG K
601	42.00	14.00
602	43.00	15.00
603	44.00	16.00
604	45.00	17.00
605	46.00	18.00
606	47.00	19.00
607	48.00	20.00
608	49.00	21.00
609	50.00	22.00
610	51.00	23.00
611	52.00	24.00
612	53.00	25.00
613	67.00	69.00
614	68.00	70.00
629	71.00	72.00
631	26.00	27.00

FIXED TARGET

BASEPLATE

THERMOCOUPLE TEMPERATURES

FIXED TARGET SHROUD

VARIABLE TARGET SHROUD

FIXED TARGET N2

VARIABLE TARGET N2

HEATER N2

FIXED TARGET FLOW METER
VARIABLE TARGET FLOW METER
BASEPLATE HEATER N2
BASEPLATE N2
BASEPLATE FLOW METER
ADJUNCT RADIATORS

NO.	A1-1 DEG K	A1-2 DEG K
558	5.00	34.00
559	6.00	35.00
550	7.00	36.00
551	8.00	37.00
506	57.00	30.00
507	58.00	31.00
516	59.00	32.00
517	60.00	33.00
514	1.00	38.00
515	2.00	39.00
508	63.00	61.00
518	64.00	62.00
519	3.00	4.00
521	9.00	10.00
523	65.00	74.00
575	73.00	76.00
579	75.00	



TEST DATA SHEET 24

Reflector Position Warm Cal Mode Section [IV] and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2 and 3.2.4.3.4.4)

BP	A1-1 Reflector			
	Para No.	Position*	Required**	Pass/Fail
WC	3.2.4.3.4.2			P
15	3.2.4.3.4.4			P
WC = Warm Cal 15 = Nadir Position				
BP	A1-2 Reflector			
	Para No.	Position*	Required**	Pass/Fail
WC	3.2.4.3.4.2			P
15	3.2.4.3.4.4			P
WC = Warm Cal 15 = Nadir Position				
<p>* Actual counts from computer printout. Rewriting counts on this data sheet is optional.</p> <p>** Required range for instrument serial number from TDS 6 of AE-26002/1 ± 10 counts. Rewriting range on this data sheet is optional.</p>				

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

K. Heigl
Test Systems Engineer

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date



Quality Control

Date



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P1 16-MAR-99 08:03:47 SCAN NUMBER 132

AMSU A1-17 A1.EXE;62 WARM CAL MODE
[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS									
		1		2		3		4	
BP	LOOK 1	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 1	LOOK 2	BP	LOOK 1
1	10417	10417	10417	9	10417	10417	10417	25	10417
2	10417	10417	10417	10	10417	10417	10417	26	10417
3	10417	10417	10417	11	10417	10417	10417	27	10417
4	10417	10417	10417	12	10417	10417	10417	28	10417
5	10417	10417	10417	13	10417	10417	10417	29	10417
6	10417	10417	10417	14	10417	10417	10417	30	10417
7	10417	10417	10417	15	10417	10417	10417	CC	0
8	10417	10417	10417	16	10417	10417	10417	WC	0
[21] UP		[22] DOWN							

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2

7DS 24

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

		REFLECTOR POSITIONS									
		2					1				
BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	10214	10214	9	10214	10214	17	10214	10214	25	10214	10214
2	10214	10214	10	10214	10214	18	10214	10214	26	10214	10214
3	10214	10214	11	10214	10214	19	10214	10214	27	10214	10214
4	10214	10214	12	10214	10214	20	10214	10214	28	10214	10214
5	10214	10214	13	10214	10214	21	10214	10214	29	10214	10214
6	10214	10214	14	10214	10214	22	10214	10214	30	10214	10214
7	10214	10214	15	10214	10214	23	10214	10214	CC	0	0
8	10214	10214	16	10214	10214	24	10214	10214	WC	0	0
[21] UP				[22] DOWN							

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS									
		1		2		3		4	
BP	LOOK 1	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 1	LOOK 2	BP	LOOK 1
1	2157	2157	2157	17	2157	2157	2157	25	2157
2	2157	2157	2157	18	2157	2157	2157	26	2157
3	2157	2157	2157	19	2157	2157	2157	27	2157
4	2157	2157	2157	20	2157	2157	2157	28	2157
5	2157	2157	2157	21	2157	2157	2157	29	2157
6	2157	2157	2157	22	2157	2157	2157	30	2157
7	2157	2157	2157	23	2157	2157	2157	CC	0
8	2157	2157	2157	24	2157	2157	2157	WC	0
[21] UP		[22] DOWN							

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2

7D524

AMSU A1-17 A1.EXE;62 NADIR MODE
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

		REFLECTOR POSITIONS							
BP		LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	1957	1957	1957	9	1957	1957	25	1957	1957
2	1957	1957	1957	10	1957	1957	26	1957	1957
3	1957	1957	1957	11	1957	1957	27	1957	1957
4	1957	1957	1957	12	1957	1957	28	1957	1957
5	1957	1957	1957	13	1957	1957	29	1957	1957
6	1957	1957	1957	14	1957	1957	30	1957	1957
7	1957	1957	1957	15	1957	1957	CC	0	0
8	1957	1957	1957	16	1957	1957	WC	0	0
[21] UP		[22] DOWN							

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

TEST DATA SHEET 25
Digital-A Data Output Warm Cal Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.2)

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038		0		1050		0	
WC	1190		0		1202		0	

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

** Required = 16,500 ± 4000 counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

Test Systems Engineer

Date



1999 Mar 10



3/16/99

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

AMSU A1-17 A1.EXE:62 WARM CAL MODE P1 16-MAR-99 08:03:14 SCAN NUMBER 128
[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA

BP	CHANNEL 3		DATA		BP		DATA	
	DATA	BP	DATA	BP	DATA	BP	DATA	BP
1	16282	9	16280	17	16277	25	16278	
2	16280	10	16283	18	16282	26	16279	
3	16278	11	16282	19	16279	27	16284	
4	16276	12	16286	20	16279	28	16286	
5	16286	13	16285	21	16283	29	16278	
6	16278	14	16282	22	16282	30	16282	
7	16285	15	16284	23	16281	CC	0	
8	16282	16	16283	24	16283	WC	0	

[21] UP

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2

TD525

AMSU A1-17 A1.EXE:62 WARM CAL MODE P1 16-MAR-99 08:03:30 SCAN NUMBER 130
[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA

BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	17585	9	17584	17	17586	25	17587
2	17586	10	17590	18	17584	26	17588
3	17589	11	17586	19	17588	27	17586
4	17586	12	17588	20	17582	28	17584
5	17588	13	17584	21	17585	29	17586
6	17587	14	17586	22	17588	30	17585
7	17581	15	17584	23	17588	CC	0
8	17588	16	17585	24	17583	WC	0

[21] UP

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL
SELECT TOUCHSCREEN BUTTON 2 [1] RETURN

TEST DATA SHEET 26 (Sheet 1 of 2)
Warm Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***			
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

* Value is from the STE printout sheets. Copying data to this sheet is optional.

** For S/N 101 through 104.

*** For S/N 105 and up.

(Continued on Sheet 2)



TEST DATA SHEET 26 (Sheet 2 of 2)
Warm Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	P
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	↓

* Value is from the STE printout sheets. Copying data to this sheet is optional.

** = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: R.H. 105

R. Haig
Test Systems Engineer

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

3/14/99
Quality Control

Date



AMSU A1-17 A1-EXE:62 WARM CAL MODE P1 16-MAR-99 08:04:08 SCAN NUMBER 135
[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

NO	DIGITAL A TEMPERATURES 1 TO 16	DIGITAL A TEMPERATURES 1 TO 16		DATA	TEMP C	
		DATA	TEMP C			
1	SCAN MOTOR A1-1	16403	20.34	9 LO CHANNEL 5	18670	24.15
2	SCAN MOTOR A1-2	16690	20.48	10 LO CHANNEL 6	17815	22.91
3	FEEDHORN A1-1	17144	21.00	11 LO CHANNEL 7	17938	23.04
4	FEEDHORN A1-2	17539	20.33	12 LO CHANNEL 8	18314	24.15
5	RF MUX A1-1	17406	22.03	13 LO CHANNEL 15	18256	24.66
6	RF MUX A1-2	17617	22.71	14 PLLO #2 CH 9/14	17084	22.13
7	LO CHANNEL 3	18623	24.38	15 PLLO #1 CH 9/14	19678	26.87
8	LO CHANNEL 4	18769	24.59	16 PLLO REFERENCE	32767	52.86

[21] UP [22] DOWN

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2

AMSU A1-17 A1.EXE;62 WARM CAL MODE
[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES 17 TO 32									
DATA		TEMP C	NO		DATA		TEMP C		
17	MIXER IF CH 3	23.16	25	IF AMP CH 11/14	18258	23.99			
18	MIXER IF CH 4	23.30	26	IF AMP CH 9	18677	24.00			
19	MIXER IF CH 5	23.25	27	IF AMP CH 10	18287	24.20			
20	MIXER IF CH 6	22.62	28	IF AMP CH 11	17576	22.30			
21	MIXER IF CH 7	22.87	29	DC/DC CONVERTER	19819	26.46			
22	MIXER IF CH 8	23.33	30	IF AMP CH 13	17761	22.38			
23	MIXER IF CH 9	22.23	31	IF AMP CH 14	17377	22.27			
24	MIXER IF CH 15	24.32	32	IF AMP CH 12	17348	22.20			
[21] UP		[22] DOWN							

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2

AMSU A1-17 A1.EXE:62 WARM CAL MODE P1 16-MAR-99 08:04:27 SCAN NUMBER 137
[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

NO	DIGITAL A TEMPERATURES 31 TO 46		DATA	TEMP C	
	DATA	TEMP C			
31 IF AMP CH 14	17383	22.28	39 A1-1 WARM LOAD 4	21239	20.10
32 IF AMP CH 12	17353	22.21	40 A1-1 WARM LOAD C	21425	20.14
33 RF SHELF A1-1	18058	23.26	41 A1-2 WARM LOAD 1	21683	20.27
34 RF SHELF A1-2	17858	23.05	42 A1-2 WARM LOAD 2	21515	20.26
35 DETECTOR/PREAMP	17161	21.26	43 A1-2 WARM LOAD 3	21542	20.31
36 A1-1 WARM LOAD 1	21283	20.04	44 A1-2 WARM LOAD 4	21474	20.31
37 A1-1 WARM LOAD 2	21481	20.06	45 A1-2 WARM LOAD C	21344	20.18
38 A1-1 WARM LOAD 3	21532	20.09	THERMAL REFERENCE	24882	
[21] UP		[22] DOWN			

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2



TEST DATA SHEET 27
Digital-A Data Output Cold Cal Mode Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.3)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	17	*	
[III]	0005	Digital-B Data Byte 1	8	8	
	0006	Digital-B Data Byte 2	14	14	
	0007	Digital-B Data Byte 3	0	0	
	0008	Digital-B Data Byte 4	0	0	

* AMSU A1 Identification Words
(data entered in decimal system)

Binary

Decimal

AMSU-A1 S/N 101
AMSU-A1 S/N 102
AMSU-A1 S/N 103
AMSU-A1 S/N 104
AMSU-A1 S/N 105
AMSU-A1 S/N 106
AMSU-A1 S/N 107
AMSU-A1 S/N 108
AMSU-A1 S/N 109

00000001 1
00000101 5
00001001 9
00001101 13
00010001 17
00010101 21
00011001 25
00011101 29
00100001 33

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hays 3/16/99
Test Systems Engineer

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

Quality Control



3/16/99

Date

AMSU A1-17 A1 EXE:62 COLD CAL MODE P1 16-MAR-99 08:10:03 SCAN NUMBER 179
[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

COMMANDS
[9] MODULE POWER = CONNECT ANTENNA IN COLD CAL POSIT = YES [15]
[10] SURVIVAL HEATER POWER = OFF ANTENNA IN NADIR POSITION = NO [16]
[11] MODULE TOTALLY OFF = ON ANTENNA IN FULL SCAN MODE = NO [17]
[12] SCANNER A1 - 1 POWER = ON PLL POWER = PLLO # 1 [18]
[13] SCANNER A1 - 2 POWER = ON COLD CAL POSITION MSB = ZERO [19]
[14] ANTENNA IN WARM CAL POSIT = NO COLD CAL POSITION LSB = ZERO [20]
POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 3

7DS27



ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE	11111111	572	COLD CAL SAMPLE 17	16423
2	SYNC SEQUENCE	11111111	574	CH 8	17547
3	SYNC SEQUENCE	11111111	576	CH 9	16948
4	UNIT ID AND SERIAL NO	00010001	578	CH 10	19037
5	DIGITAL B DATA BYTE 1	00001000	580	CH 11	18923
6	DIGITAL B DATA BYTE 2	00001110	582	CH 12	18356
7	DIGITAL B DATA BYTE 3	00000000	584	CH 13	20379
8	DIGITAL B DATA BYTE 4	00000000	586	CH 14	16827
9	REFLECTOR 1 POSITION	6013	588	CH 15	6013
10	REFLECTOR 2 POSITION	5812	590	REFLECTOR 1 POSITION 18	5812
11	REFL 1 POS 1	6013	592	REFLECTOR 2 POSITION 18	6013
12	REFL 2 POS 1	5812	594	REFL 1 POS 18	5812
13	REFL 1 POS 2	16266	596	REFL 2 POS 18	16264
14	REFL 2 POS 2	16719	598	COLD CAL SAMPLE 18	16719
15	COLD CAL SAMPLE 1	17052	600	CH 3	17055
16	CH 4	16828	602	CH 4	16827
17	CH 5	16416	604	CH 5	16417
18	CH 6	16425	606	CH 6	16429
19	CH 7	17547	608	CH 7	17546
20	CH 8	16947	610	CH 8	16943
21	CH 9	19040	612	CH 9	19044
22	CH 10	18924	614	CH 10	18917
23	CH 11	18362	616	CH 11	18354
24	CH 12	20394	618	CH 12	20400
25	CH 13	16828	620	CH 13	16827
26	CH 14	6013	622	CH 14	6013
27	CH 15	5812	624	REFLECTOR 1 POSITION 19	5812
28	REFLECTOR 1 POSITION	6013	626	REFLECTOR 2 POSITION 19	6013
29	REFLECTOR 2 POSITION	5812	628	REFL 1 POS 19	5812
30	REFL 1 POS 2	16263	630	REFL 2 POS 19	16268
31	REFL 2 POS 2	16718	632	COLD CAL SAMPLE 19	16713
32	COLD CAL SAMPLE 2	17055	634	CH 3	17056
33	CH 4	16828	636	CH 4	16827
34	CH 5	16418	638	CH 5	16416
35	CH 6	16427	640	CH 6	16423
36	CH 7	17548	642	CH 7	17549
37	CH 8	16951	644	CH 8	16950
38	CH 9	19042	646	CH 9	19039
39	CH 10	18921	648	CH 10	18919
40	CH 11	18366	650	CH 11	18361
41	CH 12	20387	652	CH 12	20416
42	CH 13	16829	654	CH 13	16830
43	CH 14	6013	656	CH 14	6013
44	CH 15	5812	658	REFLECTOR 1 POSITION 20	5812
45	REFLECTOR 1 POSITION	6013	660	REFLECTOR 2 POSITION 20	6013
46	REFLECTOR 2 POSITION	5812	662	REFL 1 POS 20	5812
47	REFL 1 POS 3	16266	664	REFL 2 POS 20	16264
48	REFL 2 POS 3	16713	666	COLD CAL SAMPLE 20	16717
49	COLD CAL SAMPLE 3	17058	668	CH 3	17053
50	CH 4	16826	670	CH 4	16830
51	CH 5	16828			
52	CH 6	16418			
53	CH 7	16427			
54	CH 8	17548			
55	CH 9	16951			
56	CH 10	19042			
57	CH 11	18921			
58	CH 12	18366			
59	CH 13	20387			
60	CH 14	16829			
61	CH 15	6013			
62	REFLECTOR 1 POSITION	6013			
63	REFLECTOR 2 POSITION	5812			
64	REFL 1 POS 3	16266			
65	REFL 2 POS 3	16713			
66	COLD CAL SAMPLE 3	17058			
67	CH 4	16826			
68	CH 5	16828			
69	CH 6	16418			
70	CH 7	16427			
71	CH 8	17548			
72	CH 9	16951			
73	CH 10	19042			
74	CH 11	18921			
75	CH 12	18366			
76	CH 13	20387			
77	CH 14	16829			
78	CH 15	6013			
79	REFLECTOR 1 POSITION	6013			
80	REFLECTOR 2 POSITION	5812			
81	REFL 1 POS 3	16266			
82	REFL 2 POS 3	16713			
83	COLD CAL SAMPLE 3	17058			
84	CH 4	16826			
85	CH 5	16828			
86	CH 6	16418			
87	CH 7	16427			
88	CH 8	17548			
89	CH 9	16951			
90	CH 10	19042			
91	CH 11	18921			
92	CH 12	18366			

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94	CH 7	16414	672	CH 7	16418
96	CH 8	16425	674	CH 8	16425
98	CH 9	17544	676	CH 9	17549
100	CH 10	16946	678	CH 10	16948
102	CH 11	19042	680	CH 11	19045
104	CH 12	18918	682	CH 12	18922
106	CH 13	18355	684	CH 13	18362
108	CH 14	20405	686	CH 14	20372
110	CH 15	16828	688	CH 15	16828
112	REFLECTOR 1 POSITION	6013	690	REFLECTOR 1 POSITION 21	6013
114	REFLECTOR 2 POSITION	5812	692	REFLECTOR 2 POSITION 21	5812
116	REFL 1 POS 4	6013	694	REFL 1 POS 21	6013
118	REFL 2 POS 4	5812	696	REFL 2 POS 21	5812
120	COLD CAL SAMPLE 4	16265	698	COLD CAL SAMPLE 21	16259
122	CH 3	16715	700	CH 3	16715
124	CH 4	17054	702	CH 4	17053
126	CH 5	16829	704	CH 5	16829
128	CH 6	16416	706	CH 6	16416
130	CH 7	16423	708	CH 7	16423
132	CH 8	17545	710	CH 8	17547
134	CH 9	16945	712	CH 9	16947
136	CH 10	19048	714	CH 10	19040
138	CH 11	18924	716	CH 11	18918
140	CH 12	18358	718	CH 12	18355
142	CH 13	20387	720	CH 13	20401
144	CH 14	16828	722	CH 14	16828
146	CH 15	6013	724	REFLECTOR 1 POSITION 22	6013
148	REFLECTOR 2 POSITION	5812	726	REFLECTOR 2 POSITION 22	5812
150	REFL 1 POS 5	6013	728	REFL 1 POS 22	6013
152	REFL 2 POS 5	5812	730	REFL 2 POS 22	5812
154	COLD CAL SAMPLE 5	16262	732	COLD CAL SAMPLE 22	16264
156	CH 3	16717	734	CH 3	16716
158	CH 4	17052	736	CH 4	17051
160	CH 5	16826	738	CH 5	16829
162	CH 6	16417	740	CH 6	16420
164	CH 7	16427	742	CH 7	16425
166	CH 8	17548	744	CH 8	17545
168	CH 9	16951	746	CH 9	16945
170	CH 10	19047	748	CH 10	19045
172	CH 11	18933	750	CH 11	18925
174	CH 12	18364	752	CH 12	18347
176	CH 13	20394	754	CH 13	20423
178	CH 14	16827	756	CH 14	16828
180	CH 15	6013	758	REFLECTOR 1 POSITION 23	6013
182	REFLECTOR 2 POSITION	5812	760	REFLECTOR 2 POSITION 23	5812
184	REFL 1 POS 6	6013	762	REFL 1 POS 23	6013
186	REFL 2 POS 6	5812	764	REFL 2 POS 23	5812
188	COLD CAL SAMPLE 6	16266	766	COLD CAL SAMPLE 23	16269
190	CH 3	16718	768	CH 3	16715
192	CH 4	17054	770	CH 4	17058

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
194	CH	16828	772	REFLECTOR 1 POSITION 24	6013
196	CH	16420	774	REFLECTOR 2 POSITION 24	5812
198	CH	16426	776	REFL 1 POS 24 2ND LOOK	6013
200	CH	17547	778	REFL 2 POS 24 2ND LOOK	5812
202	CH	16951	780	COLD CAL SAMPLE 24	16262
204	CH	19041	782		16714
206	CH	18929	784		17053
208	CH	18361	786		16417
210	CH	20397	788		17545
212	CH	16829	790		16950
214	REFLECTOR 1 POSITION	6013	792		19044
216	REFLECTOR 2 POSITION	5812	794		18914
218	REFL 1 POS 7 2ND LOOK	6013	796		18380
220	REFL 2 POS 7 2ND LOOK	5812	798		20399
222	COLD CAL SAMPLE 7	16269	800		16828
224	CH	16717	802		6013
226	CH	17056	804		5812
228	CH	16828	806		6013
230	CH	16414	808		5812
232	CH	16422	810		16262
234	CH	17549	812		16714
236	CH	16954	814		17053
238	CH	19036	816		16417
240	CH	18927	818		17545
242	CH	18360	820		16950
244	CH	20402	822		19044
246	CH	16828	824		18921
248	REFLECTOR 1 POSITION	6013	826		18359
250	REFLECTOR 2 POSITION	5812	828		20385
252	REFL 1 POS 8 2ND LOOK	6013	830		16830
254	REFL 2 POS 8 2ND LOOK	5812	832		6013
256	COLD CAL SAMPLE 8	16272	834		5812
258	CH	16714	836		16263
260	CH	17057	838		16716
262	CH	16830	840		17053
264	CH	16417	842		16829
266	CH	16427	844		16416
268	CH	17547	846		16428
270	CH	16951	848		17544
272	CH	19044	850		16951
274	CH	18931	852		19039
276	CH	18365	854		18917
278	CH	20402	856		18369
280	CH	16828	858		20388
282	REFLECTOR 1 POSITION	6013	860		16829
284	REFLECTOR 2 POSITION	5812	862		6013
286	REFL 1 POS 9 2ND LOOK	6013	864		5812
288	REFL 2 POS 9 2ND LOOK	5812	866		16263
290	COLD CAL SAMPLE 9	16268	868		16717
292	CH	16715	870		

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
294	CH 5	17058	872	CH 5	17056
296	CH 6	16827	874	CH 6	16825
298	CH 7	16417	876	CH 7	16415
300	CH 8	16427	878	CH 8	16425
302	CH 9	17547	880	CH 9	17549
304	CH 10	16942	882	CH 10	16946
306	CH 11	19042	884	CH 11	19032
308	CH 12	18924	886	CH 12	18925
310	CH 13	18354	888	CH 13	18368
312	CH 14	20391	890	CH 14	20404
314	CH 15	16828	892	CH 15	16828
316	REFLECTOR 1 POSITION 10	6013	894	REFLECTOR 1 POSITION 27	6013
318	REFLECTOR 2 POSITION 10	5812	896	REFLECTOR 2 POSITION 27	5812
320	REFL 1 POS 10 2ND LOOK	6013	898	REFL 1 POS 27 2ND LOOK	6013
322	REFL 2 POS 10 2ND LOOK	5812	900	REFL 2 POS 27 2ND LOOK	5812
324	COLD CAL SAMPLE 10	16263	902	COLD CAL SAMPLE 27	16265
326	CH 3	16715	904	CH 3	16716
328	CH 4	17053	906	CH 4	17053
330	CH 5	16828	908	CH 5	16830
332	CH 6	16420	910	CH 6	16418
334	CH 7	16425	912	CH 7	16431
336	CH 8	17549	914	CH 8	17547
338	CH 9	16950	916	CH 9	16953
340	CH 10	19038	918	CH 10	19042
342	CH 11	18931	920	CH 11	18924
344	CH 12	18364	922	CH 12	18365
346	CH 13	20415	924	CH 13	20382
348	CH 14	16829	926	CH 14	16828
350	CH 15	6013	928	CH 15	6013
352	REFLECTOR 1 POSITION 11	5812	930	REFLECTOR 1 POSITION 28	5812
354	REFLECTOR 2 POSITION 11	6013	932	REFLECTOR 2 POSITION 28	6013
356	REFL 1 POS 11 2ND LOOK	6013	934	REFL 1 POS 28 2ND LOOK	6013
358	REFL 2 POS 11 2ND LOOK	5812	936	REFL 2 POS 28 2ND LOOK	5812
360	COLD CAL SAMPLE 11	16267	938	COLD CAL SAMPLE 28	16266
362	CH 3	16714	940	CH 3	16716
364	CH 4	17051	942	CH 4	17054
366	CH 5	16827	944	CH 5	16828
368	CH 6	16417	946	CH 6	16416
370	CH 7	16424	948	CH 7	16423
372	CH 8	17550	950	CH 8	17550
374	CH 9	16950	952	CH 9	16944
376	CH 10	19037	954	CH 10	19041
378	CH 11	18916	956	CH 11	18923
380	CH 12	18361	958	CH 12	18363
382	CH 13	20389	960	CH 13	20400
384	CH 14	16829	962	CH 14	16829
386	CH 15	6013	964	CH 15	6013
388	REFLECTOR 1 POSITION 12	5812	966	REFLECTOR 1 POSITION 29	5812
390	REFLECTOR 2 POSITION 12	6013	968	REFLECTOR 2 POSITION 29	6013
392	REFL 1 POS 12 2ND LOOK	6013	970	REFL 1 POS 29 2ND LOOK	5812
	REFL 2 POS 12 2ND LOOK	5812		REFL 2 POS 29 2ND LOOK	5812
	COLD CAL SAMPLE 12 CH 3	16266		COLD CAL SAMPLE 29 CH 3	16267

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
394	CH 4	16719	972	CH 4	16718
396	CH 5	17056	974	CH 5	17054
398	CH 6	16831	976	CH 6	16828
400	CH 7	16415	978	CH 7	16414
402	CH 8	16425	980	CH 8	16423
404	CH 9	17544	982	CH 9	17549
406	CH 10	16951	984	CH 10	16949
408	CH 11	19041	986	CH 11	19036
410	CH 12	18924	988	CH 12	18931
412	CH 13	18365	990	CH 13	18366
414	CH 14	20384	992	CH 14	20388
416	CH 15	16830	994	CH 15	16829
418	REFLECTOR 1 POSITION 13	6013	996	REFLECTOR 1 POSITION 30	6013
420	REFLECTOR 2 POSITION 13	5812	998	REFLECTOR 2 POSITION 30	5812
422	REFL 1 POS 13 2ND LOOK	6013	1000	REFL 1 POS 30 2ND LOOK	6013
424	REFL 2 POS 13 2ND LOOK	5812	1002	REFL 2 POS 30 2ND LOOK	5812
426	COLD CAL SAMPLE 13	16269	1004	COLD CAL SAMPLE 30	16268
428	CH 3	16716	1006	CH 3	16716
430	CH 4	17057	1008	CH 4	17058
432	CH 5	16830	1010	CH 5	16832
434	CH 6	16420	1012	CH 6	16414
436	CH 7	16426	1014	CH 7	16425
438	CH 8	17548	1016	CH 8	17546
440	CH 9	16944	1018	CH 9	16950
442	CH 10	19036	1020	CH 10	19037
444	CH 11	18924	1022	CH 11	18931
446	CH 12	18340	1024	CH 12	18357
448	CH 13	20388	1026	CH 13	20407
450	CH 14	16828	1028	CH 14	16828
452	CH 15	6013	1030	CH 15	0E
454	REFLECTOR 1 POSITION 14	5812	1032	REFLECTOR 1 COLD CAL POS	0E
456	REFLECTOR 2 POSITION 14	6013	1034	REFLECTOR 2 COLD CAL POS	0E
458	REFL 1 POS 14 2ND LOOK	5812	1036	REFL 1 COLD CAL 2ND LOOK	0E
460	REFL 2 POS 14 2ND LOOK	16265	1038	REFL 2 COLD CAL 2ND LOOK	0
462	COLD CAL SAMPLE 14	16715	1040	COLD CAL DATA 1	0
464	CH 3	17053	1042	CH 3	0
466	CH 4	16828	1044	CH 4	0
468	CH 5	16417	1046	CH 5	0
470	CH 6	17545	1048	CH 6	0
472	CH 7	16948	1050	CH 7	0
474	CH 8	19042	1052	CH 8	0
476	CH 9	18924	1054	CH 9	0
478	CH 10	18369	1056	CH 10	0
480	CH 11	20380	1058	CH 11	0
482	CH 12	16829	1060	CH 12	0
484	CH 13	6013	1062	CH 13	0
486	CH 14	5812	1064	CH 14	0
488	CH 15	6013	1066	CH 15	0
490	REFLECTOR 1 POSITION 15	5812	1068	REFLECTOR 1 COLD CAL DATA 2	0
492	REFLECTOR 2 POSITION 15	6013	1070	REFLECTOR 2 COLD CAL DATA 2	0
	REFL 1 POS 15 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0
	REFL 2 POS 15 2ND LOOK	5812		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 15	16269		COLD CAL DATA 1	0
	CH 3	16716		CH 3	0
	CH 4	17057		CH 4	0
	CH 5	16830		CH 5	0
	CH 6	16420		CH 6	0
	CH 7	16426		CH 7	0
	CH 8	17548		CH 8	0
	CH 9	16944		CH 9	0
	CH 10	19036		CH 10	0
	CH 11	18924		CH 11	0
	CH 12	18340		CH 12	0
	CH 13	20388		CH 13	0
	CH 14	16828		CH 14	0
	CH 15	6013		CH 15	0
	REFLECTOR 1 POSITION 14	5812		REFLECTOR 1 COLD CAL POS	0E
	REFLECTOR 2 POSITION 14	6013		REFLECTOR 2 COLD CAL POS	0E
	REFL 1 POS 14 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0E
	REFL 2 POS 14 2ND LOOK	16265		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 14	16715		COLD CAL DATA 1	0
	CH 3	17053		CH 3	0
	CH 4	16828		CH 4	0
	CH 5	16417		CH 5	0
	CH 6	17545		CH 6	0
	CH 7	16948		CH 7	0
	CH 8	19042		CH 8	0
	CH 9	18924		CH 9	0
	CH 10	18369		CH 10	0
	CH 11	20380		CH 11	0
	CH 12	16829		CH 12	0
	CH 13	6013		CH 13	0
	CH 14	5812		CH 14	0
	CH 15	6013		CH 15	0
	REFLECTOR 1 POSITION 15	5812		REFLECTOR 1 COLD CAL DATA 2	0
	REFLECTOR 2 POSITION 15	6013		REFLECTOR 2 COLD CAL DATA 2	0
	REFL 1 POS 15 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0
	REFL 2 POS 15 2ND LOOK	5812		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 15	16269		COLD CAL DATA 1	0
	CH 3	16716		CH 3	0
	CH 4	17057		CH 4	0
	CH 5	16830		CH 5	0
	CH 6	16420		CH 6	0
	CH 7	16426		CH 7	0
	CH 8	17548		CH 8	0
	CH 9	16944		CH 9	0
	CH 10	19036		CH 10	0
	CH 11	18924		CH 11	0
	CH 12	18340		CH 12	0
	CH 13	20388		CH 13	0
	CH 14	16828		CH 14	0
	CH 15	6013		CH 15	0
	REFLECTOR 1 POSITION 14	5812		REFLECTOR 1 COLD CAL POS	0E
	REFLECTOR 2 POSITION 14	6013		REFLECTOR 2 COLD CAL POS	0E
	REFL 1 POS 14 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0E
	REFL 2 POS 14 2ND LOOK	16265		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 14	16715		COLD CAL DATA 1	0
	CH 3	17053		CH 3	0
	CH 4	16828		CH 4	0
	CH 5	16417		CH 5	0
	CH 6	17545		CH 6	0
	CH 7	16948		CH 7	0
	CH 8	19042		CH 8	0
	CH 9	18924		CH 9	0
	CH 10	18369		CH 10	0
	CH 11	20380		CH 11	0
	CH 12	16829		CH 12	0
	CH 13	6013		CH 13	0
	CH 14	5812		CH 14	0
	CH 15	6013		CH 15	0
	REFLECTOR 1 POSITION 15	5812		REFLECTOR 1 COLD CAL DATA 2	0
	REFLECTOR 2 POSITION 15	6013		REFLECTOR 2 COLD CAL DATA 2	0
	REFL 1 POS 15 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0
	REFL 2 POS 15 2ND LOOK	5812		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 15	16269		COLD CAL DATA 1	0
	CH 3	16716		CH 3	0
	CH 4	17057		CH 4	0
	CH 5	16830		CH 5	0
	CH 6	16420		CH 6	0
	CH 7	16426		CH 7	0
	CH 8	17548		CH 8	0
	CH 9	16944		CH 9	0
	CH 10	19036		CH 10	0
	CH 11	18924		CH 11	0
	CH 12	18340		CH 12	0
	CH 13	20388		CH 13	0
	CH 14	16828		CH 14	0
	CH 15	6013		CH 15	0
	REFLECTOR 1 POSITION 14	5812		REFLECTOR 1 COLD CAL POS	0E
	REFLECTOR 2 POSITION 14	6013		REFLECTOR 2 COLD CAL POS	0E
	REFL 1 POS 14 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0E
	REFL 2 POS 14 2ND LOOK	16265		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 14	16715		COLD CAL DATA 1	0
	CH 3	17053		CH 3	0
	CH 4	16828		CH 4	0
	CH 5	16417		CH 5	0
	CH 6	17545		CH 6	0
	CH 7	16948		CH 7	0
	CH 8	19042		CH 8	0
	CH 9	18924		CH 9	0
	CH 10	18369		CH 10	0
	CH 11	20380		CH 11	0
	CH 12	16829		CH 12	0
	CH 13	6013		CH 13	0
	CH 14	5812		CH 14	0
	CH 15	6013		CH 15	0
	REFLECTOR 1 POSITION 15	5812		REFLECTOR 1 COLD CAL DATA 2	0
	REFLECTOR 2 POSITION 15	6013		REFLECTOR 2 COLD CAL DATA 2	0
	REFL 1 POS 15 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0
	REFL 2 POS 15 2ND LOOK	5812		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 15	16269		COLD CAL DATA 1	0
	CH 3	16716		CH 3	0
	CH 4	17057		CH 4	0
	CH 5	16830		CH 5	0
	CH 6	16420		CH 6	0
	CH 7	16426		CH 7	0
	CH 8	17548		CH 8	0
	CH 9	16944		CH 9	0
	CH 10	19036		CH 10	0
	CH 11	18924		CH 11	0
	CH 12	18340		CH 12	0
	CH 13	20388		CH 13	0
	CH 14	16828		CH 14	0
	CH 15	6013		CH 15	0
	REFLECTOR 1 POSITION 14	5812		REFLECTOR 1 COLD CAL POS	0E
	REFLECTOR 2 POSITION 14	6013		REFLECTOR 2 COLD CAL POS	0E
	REFL 1 POS 14 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0E
	REFL 2 POS 14 2ND LOOK	16265		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 14	16715		COLD CAL DATA 1	0
	CH 3	17053		CH 3	0
	CH 4	16828		CH 4	0
	CH 5	16417		CH 5	0
	CH 6	17545		CH 6	0
	CH 7	16948		CH 7	0
	CH 8	19042		CH 8	0
	CH 9	18924		CH 9	0
	CH 10	18369		CH 10	0
	CH 11	20380		CH 11	0
	CH 12	16829		CH 12	0
	CH 13	6013		CH 13	0
	CH 14	5812		CH 14	0
	CH 15	6013		CH 15	0
	REFLECTOR 1 POSITION 15	5812		REFLECTOR 1 COLD CAL DATA 2	0
	REFLECTOR 2 POSITION 15	6013		REFLECTOR 2 COLD CAL DATA 2	0
	REFL 1 POS 15 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0
	REFL 2 POS 15 2ND LOOK	5812		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 15	16269		COLD CAL DATA 1	0
	CH 3	16716		CH 3	0
	CH 4	17057		CH 4	0
	CH 5	16830		CH 5	0
	CH 6	16420		CH 6	0
	CH 7	16426		CH 7	0
	CH 8	17548		CH 8	0
	CH 9	16944		CH 9	0
	CH 10	19036		CH 10	0
	CH 11	18924		CH 11	0
	CH 12	18340		CH 12	0
	CH 13	20388		CH 13	0
	CH 14	16828		CH 14	0
	CH 15	6013		CH 15	0
	REFLECTOR 1 POSITION 14	5812		REFLECTOR 1 COLD CAL POS	0E
	REFLECTOR 2 POSITION 14	6013		REFLECTOR 2 COLD CAL POS	0E
	REFL 1 POS 14 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0E
	REFL 2 POS 14 2ND LOOK	16265		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 14	16715		COLD CAL DATA 1	0
	CH 3	17053		CH 3	0
	CH 4	16828		CH 4	0
	CH 5	16417		CH 5	0
	CH 6	17545		CH 6	0
	CH 7	16948		CH 7	0
	CH 8	19042		CH 8	0
	CH 9	18924		CH 9	0
	CH 10	18369		CH 10	0
	CH 11	20380		CH 11	0
	CH 12	16829		CH 12	0
	CH 13	6013		CH 13	0
	CH 14	5812		CH 14	0
	CH 15	6013		CH 15	0
	REFLECTOR 1 POSITION 15	5812		REFLECTOR 1 COLD CAL DATA 2	0
	REFLECTOR 2 POSITION 15	6013		REFLECTOR 2 COLD CAL DATA 2	0
	REFL 1 POS 15 2ND LOOK	5812		REFL 1 COLD CAL 2ND LOOK	0
	REFL 2 POS 15 2ND LOOK	5812		REFL 2 COLD CAL 2ND LOOK	0
	COLD CAL SAMPLE 15	16269		COLD CAL DATA 1	0
	CH 3	16716		CH 3	0
	CH 4	17057		CH 4	0
	CH 5	16830		CH 5	0
	CH 6	16420		CH 6	0
	CH 7	16426		CH 7	0
	CH 8	17548		CH 8	0
	CH 9	16944		CH 9	0
	CH 10	19036		CH 10	0

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
494	COLD CAL SAMPLE 15	16269	1072		0
496		16716	1074		0
498		17057	1076		0
500		16827	1078		0
502		16420	1080		0
504		16426	1082		0
506		17547	1084		0
508		16949	1086		0
510		19047	1088		0
512		18933	1182	REFLECTOR 1 WARM CAL POS	0E
514		18359	1184	REFLECTOR 2 WARM CAL POS	0E
516		20417	1186	REFL 1 WARM CAL 2ND LOOK	0E
518		16828	1188	REFL 2 WARM CAL 2ND LOOK	0E
520	REFLECTOR 1 POSITION 16	6013	1190	WARM CAL DATA 1	0
522	REFLECTOR 2 POSITION 16	5812	1192		0
524	REFL 1 POS 16 2ND LOOK	6013	1194		0
526	REFL 2 POS 16 2ND LOOK	5812	1196		0
528	COLD CAL SAMPLE 16	16263	1198		0
530		16718	1200		0
532		17053	1202		0
534		16830	1204		0
536		16418	1206		0
538		16423	1208		0
540		17549	1210		0
542		16949	1212		0
544		19042	1214		0
546		18936	1216		0
548		18353	1218		0
550		20404	1220		0
552		16828	1222		0
554	REFLECTOR 1 POSITION 17	6013	1224		0
556	REFLECTOR 2 POSITION 17	5812	1226		0
558	REFL 1 POS 17 2ND LOOK	6013	1228		0
560	REFL 2 POS 17 2ND LOOK	5812	1230		0
562	COLD CAL SAMPLE 17	16268	1232		0
564		16719	1234		0
566		17057	1236		0
568		16826	1238		0
570		16414	1240		0

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE	DEG C
1090	SCAN MOTOR A1-1	16400	20.34	
1092	SCAN MOTOR A1-2	16717	20.53	
1094	FEEDHORN A1-1	17322	21.34	
1096	FEEDHORN A1-2	17814	20.85	
1098	RF MUX A1-1	17703	22.60	
1100	RF MUX A1-2	18009	23.45	
1102	LOCAL OSCILLATOR CHANNEL 3	19020	25.15	
1104	LOCAL OSCILLATOR CHANNEL 4	19173	25.37	
1106	LOCAL OSCILLATOR CHANNEL 5	19046	24.87	
1108	LOCAL OSCILLATOR CHANNEL 6	18010	23.28	
1110	LOCAL OSCILLATOR CHANNEL 7	18215	23.57	
1112	LOCAL OSCILLATOR CHANNEL 8	18698	24.89	
1114	LOCAL OSCILLATOR CHANNEL 15	18648	25.41	
1116	PLL LO #2 CHANNELS 9 THROUGH 14	17344	22.63	
1118	PLL LO #1 CHANNELS 9 THROUGH 14	20208	27.89	
1120	SPARE (NOT USED)	32767	52.86	
1122	MIXER/IF AMPLIFIER CHANNEL 3	18529	23.90	
1124	MIXER/IF AMPLIFIER CHANNEL 4	18217	24.05	
1126	MIXER/IF AMPLIFIER CHANNEL 5	18327	24.00	
1128	MIXER/IF AMPLIFIER CHANNEL 6	18029	23.15	
1130	MIXER/IF AMPLIFIER CHANNEL 7	18140	23.47	
1132	MIXER/IF AMPLIFIER CHANNEL 8	18120	24.08	
1134	MIXER/IF AMPLIFIER CH 9 THRU 14	17431	22.77	
1136	MIXER/IF AMPLIFIER CHANNEL 15	18665	24.97	
1138	IF AMPLIFIER CHANNEL 11 THRU 14	18653	24.75	
1140	IF AMPLIFIER CHANNEL 9	19080	24.98	
1142	IF AMPLIFIER CHANNEL 10	18692	24.81	
1144	IF AMPLIFIER CHANNEL 11	17844	22.30	
1146	DC/DC CONVERTER	20258	22.89	
1148	IF AMPLIFIER CHANNEL 13	18026	22.78	
1150	IF AMPLIFIER CHANNEL 14	17643	22.72	
1152	IF AMPLIFIER CHANNEL 12	17617	22.88	
1154	RF SHELF A1-1	18381	23.75	
1156	RF SHELF A1-2	18222	21.66	
1158	DETECTOR/PREAMPLIFIER ASSEMBLY	17371	20.08	
1160	A1-1 WARM LOAD 1	21304	20.11	
1162	A1-1 WARM LOAD 2	21505	20.13	
1164	A1-1 WARM LOAD 3	21550	20.14	
1166	A1-1 WARM LOAD 4	21260	20.18	
1168	A1-1 WARM LOAD CENTER	21445	20.39	
1170	A1-2 WARM LOAD 1	21740	20.35	
1172	A1-2 WARM LOAD 2	21560	20.41	
1174	A1-2 WARM LOAD 3	21596	20.41	
1176	A1-2 WARM LOAD 4	21525	20.28	
1178	A1-2 WARM LOAD CENTER	21392		
1180	TEMP SENSOR REFERENCE VOLTAGE	24882		

DESCRIPTION

STATUS

STATUS

STATUS

SCANNER A1-1 POWER	ON		ON
SCANNER A1-2 POWER	ON		ON
PLL POWER	PLLO # 1	PLLO # 1	PLLO # 1
ANTENNA IN WARM CAL POSITION MODE	NO	NO	NO
ANTENNA IN COLD CAL POSITION MODE	YES	YES	YES
ANTENNA IN NADIR POSITION MODE	NO	NO	NO
ANTENNA IN FULL SCAN MODE	NO	NO	NO
SURVIVAL HEATER POWER	OFF	OFF	OFF
MODULE POWER	CONNECT	CONNECT	CONNECT
COLD CAL POSITION MSB	ZERO	ZERO	ZERO
COLD CAL POSITION LSB	ZERO	ZERO	ZERO

ANALOG DATA
DESCRIPTION

VALUE

DEG C

VALUE

DEG C

A1-1 SCANNER MOTOR TEMPERATURE	213	23.5	213	23.5
A1-2 SCANNER MOTOR TEMPERATURE	214	24.5	214	24.5
A1-1 RF SHELF TEMPERATURE	214	22.0	214	22.0
A1-2 RF SHELF TEMPERATURE	214	21.5	214	21.5
A1-1 WARM LOAD TEMPERATURE	214	23.8	214	23.8
A1-2 WARM LOAD TEMPERATURE	214	23.9	214	23.9

DESCRIPTION

VALUE

DEG C

VALUE

DEG C

A1-1 ANTENNA DRIVE MOTOR CURRENT (AVRG)	4	AMPS/VOLTS	4	AMPS/VOLTS
A1-2 ANTENNA DRIVE MOTOR CURRENT (AVRG)	4	1.86	4	1.86
SIGNAL PROCESSING +15 VDC	167	14.91	167	14.91
ANTENNA DRIVE +15 VDC	167	14.66	167	14.66
SIGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00
ANTENNA DRIVE -15 VDC	149	-14.95	149	-14.95
RECEIVER AMPLIFIER +8 VDC	157	-18.05	157	-18.05
SIGNAL PROCESSOR +5 VDC	143	5.07	143	5.07
ANTENNA DRIVE +5 VDC	143	5.02	143	5.02
RECEIVER MIXER/IF +10 VDC	167	10.03	167	10.03
PHASE LOCK LOOP (CHANNEL 9/14)	167	14.99	167	14.99
PHASE LOCK LOOP (CHANNEL 9/14)	142	-14.90	142	-14.90
L.O. VOLTAGE (CHANNEL 8)	172	10.00	172	10.00
L.O. VOLTAGE (CHANNEL 7)	171	10.11	171	10.11
L.O. VOLTAGE (CHANNEL 6)	173	10.00	173	10.00
L.O. VOLTAGE (CHANNEL 3)	174	10.06	174	10.06
L.O. VOLTAGE (CHANNEL 4)	172	9.94	172	9.94
L.O. VOLTAGE (CHANNEL 5)	171	10.11	171	10.11
PLLO # 2 LOCK DETECT	4	0.08	4	0.08
PLLO # 1 LOCK DETECT	217	4.34	217	4.34
L.O. VOLTAGE (CHANNEL 15)	167	14.91	167	14.91

PRT TEMPERATURES

VARIABLE TARGET

A1-1		A1-2	
NO.	DEG K	NO.	DEG K
615	42.00	601	14.00
616	43.00	602	15.00
617	44.00	603	16.00
618	45.00	604	17.00
619	46.00	605	18.00
620	47.00	606	19.00
621	48.00	607	20.00
622	49.00	608	21.00
623	50.00	609	22.00
624	51.00	610	23.00
625	52.00	611	24.00
626	53.00	612	25.00
627	67.00	613	69.00
628	68.00	614	70.00
629	71.00	630	72.00
631	26.00	632	27.00

FIXED TARGET

BASEPLATE

THERMOCOUPLE TEMPERATURES

FIXED TARGET SHROUD

VARIABLE TARGET SHROUD

FIXED TARGET N2

VARIABLE TARGET N2

HEATER N2

FIXED TARGET FLOW METER
VARIABLE TARGET FLOW METER
BASEPLATE HEATER N2
BASEPLATE FLOW METER
ADJUNCT RADIATORS

A1-1		A1-2	
NO.	DEG K	NO.	DEG K
558	5.00	537	34.00
559	6.00	538	35.00
550	7.00	524	36.00
551	8.00	525	37.00
506	57.00	502	30.00
507	58.00	503	31.00
516	59.00	511	32.00
517	60.00	512	33.00
514	1.00	509	38.00
515	2.00	510	39.00
508	63.00	504	61.00
518	64.00	513	62.00
519	3.00	520	4.00
521	9.00	522	10.00
523	65.00	577	74.00
575	73.00	581	76.00
579	75.00		

TEST DATA SHEET 28 (Sheet 1 of 2)
Reflector Position Warm Cal Mode Section [IV], Reflector Position Cold Cal Mode Section [IV], and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2, 3.2.4.3.4.3, and 3.2.4.3.4.4)

BP	A1-1 Reflector			
	Para No.	Position*	Required**	Pass/Fail
CC	3.2.4.3.4.3, Step 4			
	a.			P
	b.			P
	c.			P
	d.			P

CC = Cold Cal

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

** Required range for instrument serial number from TDS 6 of AE-26002/1 ± 10 counts. Rewriting range on this data sheet is optional.

3.2.4.3.4.3, Step 4 Substep	MSB	LSB
a.	0	0
b.	0	1
c.	1	0
d.	1	1

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105
R. Haid 3/16/99

Test Systems Engineer Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date



Quality Control

Date



AMSU A1-17 A1.EXE:62 COLD CAL MODE P1 16-MAR-99 08:12:05 SCAN NUMBER 194
[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS									
		1		2		3		4	
BP	LOOK 1	LOOK 1	BP	LOOK 2	LOOK 2	BP	LOOK 1	LOOK 1	LOOK 2
1	6013	6013	9	6013	6013	17	6013	6013	25
2	6013	6013	10	6013	6013	18	6013	6013	26
3	6013	6013	11	6013	6013	19	6013	6013	27
4	6013	6013	12	6013	6013	20	6013	6013	28
5	6013	6013	13	6013	6013	21	6013	6013	29
6	6013	6013	14	6013	6013	22	6013	6013	30
7	6013	6013	15	6013	6013	23	6013	6013	CC
8	6013	6013	16	6013	6013	24	6013	6013	WC
[21] UP		[22] DOWN							

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2

7DS28
10F2

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS									
		1		2		3		4	
BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP
1	5945	5945	9	5945	5945	17	5945	5945	25
2	5945	5945	10	5945	5945	18	5945	5945	26
3	5945	5945	11	5945	5945	19	5945	5945	27
4	5945	5945	12	5945	5945	20	5945	5945	28
5	5945	5945	13	5945	5945	21	5945	5945	29
6	5945	5945	14	5945	5945	22	5945	5945	30
7	5945	5945	15	5945	5945	23	5945	5945	CC
8	5945	5945	16	5945	5945	24	5945	5945	WC
[21] UP				[22] DOWN					

AMSU A1-17 A1.EXE:62 COLD CAL MODE P1 16-MAR-99 08:18:35 SCAN NUMBER 243
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS									
		1		2		3		4	
BP	LOOK	LOOK	BP	LOOK	LOOK	BP	LOOK	LOOK	BP
1	5868	5868	9	5868	5868	17	5868	5868	25
2	5868	5868	10	5868	5868	18	5868	5868	26
3	5868	5868	11	5868	5868	19	5868	5868	27
4	5868	5868	12	5868	5868	20	5868	5868	28
5	5868	5868	13	5868	5868	21	5868	5868	29
6	5868	5868	14	5868	5868	22	5868	5868	30
7	5868	5868	15	5868	5868	23	5868	5868	CC
8	5868	5868	16	5868	5868	24	5868	5868	WC
[21] UP				[22] DOWN					

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS ¹									
BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP
1	5717	5717	9	5717	5717	17	5717	5717	25
2	5717	5717	10	5717	5717	18	5717	5717	26
3	5717	5717	11	5717	5717	19	5717	5717	27
4	5717	5717	12	5717	5717	20	5717	5717	28
5	5717	5717	13	5717	5717	21	5717	5717	29
6	5717	5717	14	5717	5717	22	5717	5717	30
7	5717	5717	15	5717	5717	23	5717	5717	CC
8	5717	5717	16	5717	5717	24	5717	5717	WC
[21] UP [22] DOWN									

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2

TEST DATA SHEET 28 (Sheet 2 of 2)

Reflector Position Warm Cal Mode Section [IV], Reflector Position Cold Cal Mode Section [IV], and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2, 3.2.4.3.4.3, and 3.2.4.3.4.4)

BP	A1-2 Reflector			
	Para No.	Position*	Required**	Pass/Fail
CC	3.2.4.3.4.3, Step 4			
	a.			P
	b.			P
	c.			P
	d.			P

CC = Cold Cal

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

** Required range for instrument serial number from TDS 6 of AE-26002/1 ± 10 counts. Rewriting range on this data sheet is optional.

3.2.4.3.4.3, Step 4 Substep	MSB	LSB
a.	0	0
b.	0	1
c.	1	0
d.	1	1

Circle Test: ☒ CPT ☐ LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 22.1 105

R. Haig 3/16/99
Test Systems Engineer

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date



Quality Control

Date



AMSU A1-17 A1.EXE:62 COLD CAL MODE P1 16-MAR-99 08:12:14 SCAN NUMBER 195
[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

REFLECTOR POSITIONS 2									
BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP
1	5812	5812	9	5812	5812	17	5812	5812	25
2	5812	5812	10	5812	5812	18	5812	5812	26
3	5812	5812	11	5812	5812	19	5812	5812	27
4	5812	5812	12	5812	5812	20	5812	5812	28
5	5812	5812	13	5812	5812	21	5812	5812	29
6	5812	5812	14	5812	5812	22	5812	5812	30
7	5812	5812	15	5812	5812	23	5812	5812	CC
8	5812	5812	16	5812	5812	24	5812	5812	WC
[21] UP		[22] DOWN							

POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL
[1] RETURN
SELECT TOUCHSCREEN BUTTON 2

TDS28
2 of 2

AMSU A1-17 A1.EXE:62 COLD CAL MODE P1 16-MAR-99 08:17:31 SCAN NUMBER 235
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

		REFLECTOR POSITIONS									
		2				1					
BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	5746	5746	9	5746	5746	17	5746	5746	25	5746	5746
2	5746	5746	10	5746	5746	18	5746	5746	26	5746	5746
3	5746	5746	11	5746	5746	19	5746	5746	27	5746	5746
4	5746	5746	12	5746	5746	20	5746	5746	28	5746	5746
5	5746	5746	13	5746	5746	21	5746	5746	29	5746	5746
6	5746	5746	14	5746	5746	22	5746	5746	30	5746	5746
7	5746	5746	15	5746	5746	23	5746	5746	CC	0	0
8	5746	5746	16	5746	5746	24	5746	5746	WC	0	0

[21] UP
 POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

AMSU A1-17 A1.EXE:62 COLD CAL MODE P1 16-MAR-99 08:18:43 SCAN NUMBER 244
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

		REFLECTOR POSITIONS									
		2				1					
BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2
1	5668	5668	9	5668	5668	17	5668	5668	25	5668	5668
2	5668	5668	10	5668	5668	18	5668	5668	26	5668	5668
3	5668	5668	11	5668	5668	19	5668	5668	27	5668	5668
4	5668	5668	12	5668	5668	20	5668	5668	28	5668	5668
5	5668	5668	13	5668	5668	21	5668	5668	29	5668	5668
6	5668	5668	14	5668	5668	22	5668	5668	30	5668	5668
7	5668	5668	15	5668	5668	23	5668	5668	CC	0	0
8	5668	5668	16	5668	5668	24	5668	5668	WC	0	0
[21] UP				[22] DOWN							

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

AMSU A1-17 A1.EXE:62 COLD CAL MODE P1 16-MAR-99 08:19:55 SCAN NUMBER 253
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

		REFLECTOR POSITIONS 2							
BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP	LOOK 1	LOOK 2	BP
1	5519	5519	9	5519	5519	17	5519	5519	25
2	5519	5519	10	5519	5519	18	5519	5519	26
3	5519	5519	11	5519	5519	19	5519	5519	27
4	5519	5519	12	5519	5519	20	5519	5519	28
5	5519	5519	13	5519	5519	21	5519	5519	29
6	5519	5519	14	5519	5519	22	5519	5519	30
7	5519	5519	15	5519	5519	23	5519	5519	CC
8	5519	5519	16	5519	5519	24	5519	5519	WC
[21] UP				[22] DOWN					

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

TEST DATA SHEET 29

Digital-A Data Output Cold Cal Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.3)
Condition: Cold Cal Position MSB=0 and Cold Cal Position LSB=0

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038				1050			
WC	1190				1202			

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

** Required = $16,500 \pm 4000$ counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

SN: 105

R. High
Test Systems Engineer

Date

MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

3/16/99
Quality Control

Date



AMSU A1-17 A1.EXE:62 COLD CAL MODE P1 16-MAR-99 08:10:38 SCAN NUMBER 183
[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA

BP		DATA		BP		DATA		BP		DATA	
1	16270	9	16261	17	16267	25	16259				
2	16264	10	16261	18	16265	26	16267				
3	16261	11	16260	19	16265	27	16265				
4	16261	12	16266	20	16258	28	16260				
5	16261	13	16261	21	16258	29	16267				
6	16265	14	16262	22	16266	30	16263				
7	16262	15	16262	23	16257	CC	0				
8	16264	16	16265	24	16257	WC	0				
	[22]		DOWN								

AMSU A1-17 A1.EXE:62 COLD CAL MODE P1 16-MAR-99 08:11:04 SCAN NUMBER 187
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA

CHANNEL 9		DATA		BP		DATA		BP		DATA	
BP	DATA	BP	DATA	BP	DATA	BP	DATA	BP	DATA	BP	DATA
1	17543	9	17545	17	17541	25	17545				
2	17545	10	17540	18	17541	26	17542				
3	17540	11	17541	19	17540	27	17539				
4	17540	12	17540	20	17538	28	17540				
5	17540	13	17541	21	17540	29	17541				
6	17537	14	17543	22	17540	30	17539				
7	17537	15	17541	23	17541	CC	0				
8	17544	16	17543	24	17542	WC	0				
	[22]	DOWN									

[21] UP

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL
 SELECT TOUCHSCREEN BUTTON 2 [1] RETURN

TEST DATA SHEET 30 (Sheet 1 of 2)
Cold Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.3)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	P
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***			
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	P

* Value is from the STE printout sheets. Copying data to this sheet is optional.

** For S/N 101 through 104.

*** For S/N 105 and up.

(Continued on Sheet 2)

TEST DATA SHEET 30 (Sheet 2 of 2)
Cold Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.3)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	P
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	✓

* Value is from the STE printout sheets. Copying data to this sheet is optional.
** = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 317234 SN: 105

R. Hay 3/16/99
Test Systems Engineer Date

MAR 17 1999
Customer Representative Date
(Flight Hardware Only)

3/16/99
Quality Control Date

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES 1 TO 16			
NO	DATA	TEMP C	TEMP C
1	SCAN MOTOR A1-1	16410	20.36
2	SCAN MOTOR A1-2	16734	20.56
3	FEEDHORN A1-1	17399	21.48
4	FEEDHORN A1-2	17927	21.07
5	RF MUX A1-1	17825	22.83
6	RF MUX A1-2	18170	23.76
7	LO CHANNEL 3	19185	25.47
8	LO CHANNEL 4	19339	25.69
[21] UP			
[22] DOWN			
9	LO CHANNEL 5	19204	25.18
10	LO CHANNEL 6	18090	23.43
11	LO CHANNEL 7	18333	23.80
12	LO CHANNEL 8	18853	25.19
13	LO CHANNEL 15	18801	25.71
14	PLLO #2 CH 9/14	17466	22.86
15	PLLO #1 CH 9/14	20396	28.26
16	PLLO REFERENCE	32767	52.86

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 2

7DS 30

MSU A1-17 A1.EXE:62 COLD CAL MODE P1 16-MAR-99 08:12:46 SCAN NUMBER 199
 5] DIGITAL A DATA ELEMENT 0000
 6] DIGITAL B DATA ELEMENT 00
 7] ANALOG DATA ELEMENT 00

IO	DIGITAL A TEMPERATURES 17 TO 32			
	DATA	TEMP C	NO	TEMP C
7	MIXER IF CH 3	18703	25 IF AMP CH 11/14	18820
8	MIXER IF CH 4	18393	26 IF AMP CH 9	19246
9	MIXER IF CH 5	18498	27 IF AMP CH 10	18861
10	MIXER IF CH 6	18150	28 IF AMP CH 11	17967
11	MIXER IF CH 7	18280	29 DC/DC CONVERTER	20435
12	MIXER IF CH 8	18296	30 IF AMP CH 13	18148
13	MIXER IF CH 9/14	17559	31 IF AMP CH 14	17766
14	MIXER IF CH 15	18812	32 IF AMP CH 12	17739
21	UP	[22] DOWN		

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

DATE	TIME	SCAN NUMBER	201
12 MAR 68	08.12.56		

AL-17 A1.EXE:62 COLD CAL MODE
DIGITAL A DATA ELEMENT 0000

(SU
 A1-17 A1.EXE:62
 DIGITAL: A DATA
 COLD CAL MOD
 ELEMENT 0000

STATION	DATA	ELEMENT	00
1	100	100	100
2	200	200	200
3	300	300	300
4	400	400	400
5	500	500	500
6	600	600	600
7	700	700	700
8	800	800	800
9	900	900	900
10	1000	1000	1000
11	1100	1100	1100
12	1200	1200	1200
13	1300	1300	1300
14	1400	1400	1400
15	1500	1500	1500
16	1600	1600	1600
17	1700	1700	1700
18	1800	1800	1800
19	1900	1900	1900
20	2000	2000	2000
21	2100	2100	2100
22	2200	2200	2200
23	2300	2300	2300
24	2400	2400	2400
25	2500	2500	2500
26	2600	2600	2600
27	2700	2700	2700
28	2800	2800	2800
29	2900	2900	2900
30	3000	3000	3000
31	3100	3100	3100
32	3200	3200	3200
33	3300	3300	3300
34	3400	3400	3400
35	3500	3500	3500
36	3600	3600	3600
37	3700	3700	3700
38	3800	3800	3800
39	3900	3900	3900
40	4000	4000	4000
41	4100	4100	4100
42	4200	4200	4200
43	4300	4300	4300
44	4400	4400	4400
45	4500	4500	4500
46	4600	4600	4600
47	4700	4700	4700
48	4800	4800	4800
49	4900	4900	4900
50	5000	5000	5000
51	5100	5100	5100
52	5200	5200	5200
53	5300	5300	5300
54	5400	5400	5400
55	5500	5500	5500
56	5600	5600	5600
57	5700	5700	5700
58	5800	5800	5800
59	5900	5900	5900
60	6000	6000	6000
61	6100	6100	6100
62	6200	6200	6200
63	6300	6300	6300
64	6400	6400	6400
65	6500	6500	6500
66	6600	6600	6600
67	6700	6700	6700
68	6800	6800	6800
69	6900	6900	6900
70	7000	7000	7000
71	7100	7100	7100
72	7200	7200	7200
73	7300	7300	7300
74	7400	7400	7400
75	7500	7500	7500
76	7600	7600	7600
77	7700	7700	7700
78	7800	7800	7800
79	7900	7900	7900
80	8000	8000	8000
81	8100	8100	8100
82	8200	8200	8200
83	8300	8300	8300
84	8400	8400	8400
85	8500	8500	8500
86	8600	8600	8600
87	8700	8700	8700
88	8800	8800	8800
89	8900	8900	8900
90	9000	9000	9000
91	9100	9100	

SYMBOL	UNIT	DATA	ELEMENT	00
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10
11	11	11	11	11
12	12	12	12	12
13	13	13	13	13
14	14	14	14	14
15	15	15	15	15
16	16	16	16	16
17	17	17	17	17
18	18	18	18	18
19	19	19	19	19
20	20	20	20	20
21	21	21	21	21
22	22	22	22	22
23	23	23	23	23
24	24	24	24	24
25	25	25	25	25
26	26	26	26	26
27	27	27	27	27
28	28	28	28	28
29	29	29	29	29
30	30	30	30	30
31	31	31	31	31
32	32	32	32	32
33	33	33	33	33
34	34	34	34	34
35	35	35	35	35
36	36	36	36	36
37	37	37	37	37
38	38	38	38	38
39	39	39	39	39
40	40	40	40	40
41	41	41	41	41
42	42	42	42	42
43	43	43	43	43
44	44	44	44	44
45	45	45	45	45
46	46	46	46	46
47	47	47	47	47
48	48	48	48	48
49	49	49	49	49
50	50	50	50	50
51	51	51	51	51
52	52	52	52	52
53	53	53	53	53
54	54	54	54	54
55	55	55	55	55
56	56	56	56	56
57	57	57	57	57
58	58	58	58	58
59	59	59	59	59
60	60	60	60	60
61	61	61	61	61
62	62	62	62	62
63	63	63	63	63
64	64	64	64	64
65	65	65	65	65
66	66	66	66	66
67	67	67	67	67
68	68	68	68	68
69	69	69	69	69
70	70	70	70	70
71	71	71	71	71
72	72	72	72	72
73	73	73	73	73
74	74	74	74	74
75	75	75	75	75
76	76	76	76	76
77	77	77	77	77
78	78	78	78	78
79	79	79	79	79
80	80	80	80	80
81	81	81	81	81
82	82	82	82	82
83	83	83	83	83
84	84	84	84	84
85	85	85	85	85
86	86	86	86	86
87	87	87	87	87

	DIGITAL A TEMPERATURES 31 TO 46		NO	WARM LOAD	DATA	TEMP C
	DATA	TEMP C				
IF AMP CH 14	17777	23.03	39	A1-1 WARM LOAD	4	21274
IF AMP CH 12	17750	22.97	40	A1-1 WARM LOAD	1	21458
RF SHELF A1-1	18541	24.19	41	A1-2 WARM LOAD	1	21765
RF SHELF A1-2	18405	24.10	42	A1-2 WARM LOAD	2	21593
DETECTOR/PREAMP	17476	21.86	43	A1-2 WARM LOAD	3	21628
A1-1 WARM LOAD	21317	20.10	44	A1-2 WARM LOAD	4	21559
A1-1 WARM LOAD	21516	20.13	45	A1-2 WARM LOAD	C	21423
			46	PREFERENCE		24882

	DATA	TEMP C	NO	WARM	LOAD	DATA
IF AMP CH 14	17777	23.03	39	A1-1	WARM LOAD	21274
IF AMP CH 12	17750	22.97	40	A1-1	WARM LOAD	20.21
IF SHELF A1-1	18541	24.19	41	A1-2	WARM LOAD	20.44
RF SHELF A1-2	18405	24.10	42	A1-2	WARM LOAD	20.41
RF SHELF A1-2	17476	21.86	43	A1-2	WARM LOAD	20.48
DETECTOR/PREAMP	21317	20.10	44	A1-2	WARM LOAD	20.47
A1-1 WARM LOAD	21516	20.13	45	A1-2	WARM LOAD	20.34
A1-1 WARM LOAD	21516	20.13	45	A1-2	PREFERENCE	24882

ITEM	DESCRIPTION	QTY	UNIT	PRICE	TOTAL	DATE	REMARKS
1	IF AMP CH 14	1	CH	17777	17777	23.03	
2	IF AMP CH 12	1	CH	17750	17750	22.97	
3	IF AMP CH 11	1	CH	18541	18541	22.41	
4	RF SHELF A1-2	1	SHELF	18405	18405	24.10	
5	RF SHELF A1-1	1	SHELF	18405	18405	24.10	
6	RETECTOR/PREAMP	1	RETECTOR	17476	17476	21.86	
7	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
8	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
9	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
10	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
11	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
12	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
13	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
14	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
15	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
16	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
17	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
18	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
19	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
20	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
21	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
22	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
23	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
24	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
25	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
26	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
27	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
28	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
29	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
30	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
31	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
32	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
33	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
34	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
35	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
36	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
37	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
38	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
39	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
40	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
41	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
42	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
43	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
44	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
45	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
46	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
47	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
48	A1-2 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
49	A1-1 WARM LOAD	1	WARM LOAD	21516	21516	20.13	
50	A1-2 WARM LOAD	1	WARM LOAD	21516	21516		

[illegible]

2	IF AMP CH 1-2	27759	24.19	41 A1 -2 WARM LOAD	21593	20.41
3	RF SHELF A1-1	18541	24.10	42 A1 -2 WARM LOAD	21598	20.47
4	RF SHELF A1-2	18405	21.86	43 A1 -2 WARM LOAD	21559	20.34
5	DETECTOR/PREAMP	17476	20.10	44 A1 -2 WARM LOAD	21423	20.34
6	A1-1 WARM LOAD	21317	20.13	45 A1 -2 WARM LOAD	21423	20.34
7	A1-1 WARM LOAD	21516	20.13	TUTUMAL PREFERENCE	24882	

ITEM	DESCRIPTION	QTY	UNIT	PRICE	TOTAL
1	REF SHELF AL-1	1	EA	18405	18405
2	REF SHELF AL-2	1	EA	17476	17476
3	DETECTOR/PREAMP	1	EA	21317	21317
4	AL-1 WARM LOAD	2	EA	21516	43032
5	AL-1 WARM LOAD	2	EA	21516	43032
6	AL-1 WARM LOAD	2	EA	21516	43032
7	AL-1 WARM LOAD	2	EA	21516	43032
8	AL-1 WARM LOAD	2	EA	21516	43032
9	AL-1 WARM LOAD	2	EA	21516	43032
10	AL-1 WARM LOAD	2	EA	21516	43032
11	AL-1 WARM LOAD	2	EA	21516	43032
12	AL-1 WARM LOAD	2	EA	21516	43032
13	AL-1 WARM LOAD	2	EA	21516	43032
14	AL-1 WARM LOAD	2	EA	21516	43032
15	AL-1 WARM LOAD	2	EA	21516	43032
16	AL-1 WARM LOAD	2	EA	21516	43032
17	AL-1 WARM LOAD	2	EA	21516	43032
18	AL-1 WARM LOAD	2	EA	21516	43032
19	AL-1 WARM LOAD	2	EA	21516	43032
20	AL-1 WARM LOAD	2	EA	21516	43032
21	AL-1 WARM LOAD	2	EA	21516	43032
22	AL-1 WARM LOAD	2	EA	21516	43032
23	AL-1 WARM LOAD	2	EA	21516	43032
24	AL-1 WARM LOAD	2	EA	21516	43032
25	AL-1 WARM LOAD	2	EA	21516	43032
26	AL-1 WARM LOAD	2	EA	21516	43032
27	AL-1 WARM LOAD	2	EA	21516	43032
28	AL-1 WARM LOAD	2	EA	21516	43032
29	AL-1 WARM LOAD	2	EA	21516	43032
30	AL-1 WARM LOAD	2	EA	21516	43032
31	AL-1 WARM LOAD	2	EA	21516	43032
32	AL-1 WARM LOAD	2	EA	21516	43032
33	AL-1 WARM LOAD	2	EA	21516	43032
34	AL-1 WARM LOAD	2	EA	21516	43032
35	AL-1 WARM LOAD	2	EA	21516	43032
36	AL-1 WARM LOAD	2	EA	21516	43032
37	AL-1 WARM LOAD	2	EA	21516	43032
38	AL-1 WARM LOAD	2	EA	21516	43032
39	AL-1 WARM LOAD	2	EA	21516	43032
40	AL-1 WARM LOAD	2	EA	21516	43032
41	AL-1 WARM LOAD	2	EA	21516	43032
42	AL-1 WARM LOAD	2	EA	21516	43032
43	AL-1 WARM LOAD	2	EA	21516	43032
44	AL-1 WARM LOAD	2	EA	21516	43032
45	AL-1 WARM LOAD	2	EA	21516	43032
46	AL-1 WARM LOAD	2	EA	21516	43032
47	AL-1 WARM LOAD	2	EA	21516	43032
48	AL-1 WARM LOAD	2	EA	21516	43032
49	AL-1 WARM LOAD	2	EA	21516	43032
50	AL-1 WARM LOAD	2	EA	21516	43032
51	AL-1 WARM LOAD	2	EA	21516	43032
52	AL-1 WARM LOAD	2	EA	21516	43032
53	AL-1 WARM LOAD	2	EA	21516	43032
54	AL-1 WARM LOAD	2	EA	21516	43032
55	AL-1 WARM LOAD	2	EA	21516	43032
56	AL-1 WARM LOAD	2	EA	21516	43032
57	AL-1 WARM LOAD	2	EA	21516	43032
58	AL-1 WARM LOAD	2	EA	21516	43032
59	AL-1 WARM LOAD	2	EA	21516	43032
60	AL-1 WARM LOAD	2	EA	21516	43032
61	AL-1 WARM LOAD	2	EA	21516	43032
62	AL-1 WARM LOAD	2	EA	21516	43032
63	AL-1 WARM LOAD	2	EA	21516	43032
64	AL-1 WARM LOAD	2	EA	21516	43032
65					

	REF SHELF	AL-2	DETECTOR/PREAMP	AL-1	WARM LOAD	AL-1	WARM LOAD	AL-1	WARM LOAD	PREFERENCE	TOTAL
1	18403	17476	21317	21516	21516	21516	21516	21516	21516	21516	21516
2	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
3	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
4	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
5	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
6	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
7	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
8	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
9	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
10	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
11	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
12	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
13	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
14	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
15	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
16	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
17	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
18	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
19	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
20	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
21	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
22	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
23	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
24	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
25	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
26	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
27	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
28	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
29	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
30	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
31	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
32	21866	20110	20110	20110	20110	20110	20110	20110	20110	20110	20110
33	21866	20110	20110	20110	2011						

[illegible]

	A1-1	WARM LOAD	21317	45 A1-2 WARM LOAD	21423	C
	A1-1	WARM LOAD	21516	THERMAL REFERENCE	24882	

WAPM LOAD 2 21516
ZV.13
SUPPL. REFERENCE
Z488Z

```

3 3 A1-1 WARM LOAD 3 21566
      20.10
      [ 22 ] DOWN

```

ZI] OF					
	POWER [4] ON	[1] RETURN	[2] FULL		

SELECT TOUCHSCREEN BUTTON 2



TEST DATA SHEET 31
Digital-A Data Output Nadir Mode Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.4)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1	255	255	P
	0002	Sync Sequence Byte 2	255	255	
	0003	Sync Sequence Byte 3	255	255	
[II]	0004	Unit I.D. and Serial N	17	*	
[III]	0005	Digital-B Data Byte 1	16	16	
	0006	Digital-B Data Byte 2	14	14	
	0007	Digital-B Data Byte 3	0	0	
	0008	Digital-B Data Byte 4	0	0	

* AMSU A1 Identification Words
(data entered in decimal system)

Binary

Decimal

AMSU-A1 S/N 101
AMSU-A1 S/N 102
AMSU-A1 S/N 103
AMSU-A1 S/N 104
AMSU-A1 S/N 105
AMSU-A1 S/N 106
AMSU-A1 S/N 107
AMSU-A1 S/N 108
AMSU-A1 S/N 109

00000001
00000101
00001001
00001101
00010001
00010101
00011001
00011101
00100001

1
5
9
13
17
21
25
29
33

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

Test Systems Engineer

Date



MAR 17 1999



Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date



F1 16 MAR-99 08:22:52 SCAN NUMBER 275

AMSU A1-17 A1.EXE;62 NADIR MODE
[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

COMMANDS
[9] MODULE POWER = CONNECT ANTENNA IN COLD CAL POSIT = NO [15]
[10] SURVIVAL HEATER POWER = OFF ANTENNA IN NADIR POSITION = YES [16]
[11] MODULE TOTALLY OFF = ON ANTENNA IN FULL SCAN MODE = NO [17]
[12] SCANNER A1 - 1 POWER = ON PLL POWER = PLLO # 1 [18]
[13] SCANNER A1 - 2 POWER = ON COLD CAL POSITION MSB = ZERO [19]
[14] ANTENNA IN WARM CAL POSIT = NO COLD CAL POSITION LSB = ZERO [20]
POWER [4] ON
SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
SELECT TOUCHSCREEN BUTTON 3

7DS 31



ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
1	SYNC SEQUENCE BYTE 1	11111111	572	NADIR SAMPLE	16380
2	SYNC SEQUENCE BYTE 2	11111111	574		17503
3	SYNC SEQUENCE BYTE 3	11111111	576		16871
4	UNIT ID AND SERIAL NO	00010001	578		18867
5	DIGITAL B DATA BYTE 1	00010000	580		18770
6	DIGITAL B DATA BYTE 2	00001110	582		18200
7	DIGITAL B DATA BYTE 3	00000000	584		20199
8	DIGITAL B DATA BYTE 4	00000000	586		16793
10	REFLECTOR 1 POSITION	2149	588	REFLECTOR 1 POSITION	2149
12	REFLECTOR 2 POSITION	1950	590	REFLECTOR 2 POSITION	1950
14	REFL 1 POS 1 2ND LOOK	2149	592	REFL 1 POS 18 2ND LOOK	2149
16	REFL 2 POS 1 2ND LOOK	1950	594	REFL 2 POS 18 2ND LOOK	1950
18	NADIR SAMPLE	16219	596	NADIR SAMPLE	16221
20		16664	598		16661
22		16996	600		16999
24		16808	602		16808
26		16389	604		16392
28		16379	606		16383
30		17500	608		17502
32		16869	610		16873
34		18865	612		16877
36		18770	614		18773
38		18207	616		18210
40		20223	618		20195
42		16791	620		16792
44	REFLECTOR 1 POSITION	2149	622	REFLECTOR 1 POSITION	2149
46	REFLECTOR 2 POSITION	1950	624	REFLECTOR 2 POSITION	1950
48	REFL 1 POS 2 2ND LOOK	2149	626	REFL 1 POS 19 2ND LOOK	2149
50	REFL 2 POS 2 2ND LOOK	1950	628	REFL 2 POS 19 2ND LOOK	1950
52	NADIR SAMPLE	16225	630	NADIR SAMPLE	16223
54		16665	632		16664
56		17003	634		17002
58		16808	636		16807
60		16388	638		16391
62		16379	640		16382
64		17501	642		17505
66		16872	644		16873
68		18874	646		18873
70		18761	648		18760
72		18214	650		18225
74		20237	652		20214
76		16792	654		16793
78	REFLECTOR 1 POSITION	2149	656	REFLECTOR 1 POSITION	2149
80	REFLECTOR 2 POSITION	1950	658	REFLECTOR 2 POSITION	1950
82	REFL 1 POS 3 2ND LOOK	2149	660	REFL 1 POS 20 2ND LOOK	2149
84	REFL 2 POS 3 2ND LOOK	1950	662	REFL 2 POS 20 2ND LOOK	1950
86	NADIR SAMPLE	16224	664	NADIR SAMPLE	16223
88		16663	666		16667
90		17003	668		17000
92		16810	670		16810

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
94	CH 7	16391	672	CH 7	16392
96	CH 8	16380	674	CH 8	16381
98	CH 9	17497	676	CH 9	17505
100	CH 10	16877	678	CH 10	16872
102	CH 11	18871	680	CH 11	18872
104	CH 12	18769	682	CH 12	18758
106	CH 13	18217	684	CH 13	18199
108	CH 14	20218	686	CH 14	20215
110	CH 15	16792	688	CH 15	16792
112	REFLECTOR 1 POSITION 4	2149	690	REFLECTOR 1 POSITION 21	2149
114	REFLECTOR 2 POSITION 4	1950	692	REFLECTOR 2 POSITION 21	1950
116	REFL 1 POS 4	2149	694	REFL 1 POS 21	2149
118	REFL 2 POS 4	1950	696	REFL 2 POS 21	1950
120	NADIR SAMPLE	16224	698	NADIR SAMPLE	16217
122	CH 3	16667	700	CH 3	16665
124	CH 4	17002	702	CH 4	16999
126	CH 5	16810	704	CH 5	16806
128	CH 6	16391	706	CH 6	16392
130	CH 7	16384	708	CH 7	16384
132	CH 8	17499	710	CH 8	17502
134	CH 9	16870	712	CH 9	16875
136	CH 10	18876	714	CH 10	18873
138	CH 11	18766	716	CH 11	18775
140	CH 12	18207	718	CH 12	18198
142	CH 13	20198	720	CH 13	20216
144	CH 14	16793	722	CH 14	16794
146	CH 15	2149	724	CH 15	2149
148	REFLECTOR 1 POSITION 5	1950	726	REFLECTOR 1 POSITION 22	1950
150	REFLECTOR 2 POSITION 5	2149	728	REFLECTOR 2 POSITION 22	2149
152	REFL 1 POS 5	1950	730	REFL 1 POS 22	1950
154	REFL 2 POS 5	16217	732	REFL 2 POS 22	16219
156	NADIR SAMPLE	16663	734	NADIR SAMPLE	16667
158	CH 3	17003	736	CH 3	17001
160	CH 4	16806	738	CH 4	16809
162	CH 5	16391	740	CH 5	16393
164	CH 6	16382	742	CH 6	16381
166	CH 7	17504	744	CH 7	17501
168	CH 8	16875	746	CH 8	16873
170	CH 9	18882	748	CH 9	18868
172	CH 10	18773	750	CH 10	18759
174	CH 11	18198	752	CH 11	18210
176	CH 12	20231	754	CH 12	20195
178	CH 13	16791	756	CH 13	16793
180	CH 14	2149	758	CH 14	2149
182	CH 15	1950	760	CH 15	1950
184	REFLECTOR 1 POSITION 6	2149	762	REFLECTOR 1 POSITION 23	2149
186	REFLECTOR 2 POSITION 6	1950	764	REFLECTOR 2 POSITION 23	1950
188	REFL 1 POS 6	16219	766	REFL 1 POS 23	16223
190	REFL 2 POS 6	16667	768	REFL 2 POS 23	16661
192	NADIR SAMPLE	17002	770	NADIR SAMPLE	16999

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
194	CH	16810	772	CH	16807
196	CH	16388	774	CH	16395
198	CH	16383	776	CH	16376
200	CH	17505	778	CH	17502
202	CH	16872	780	CH	16875
204	CH	18876	782	CH	18877
206	CH	18770	784	CH	18766
208	CH	18193	786	CH	18217
210	CH	20207	788	CH	20203
212	CH	16792	790	CH	16793
214	REFLECTOR 1 POSITION	2149	792	REFLECTOR 1 POSITION 24	2149
216	REFLECTOR 2 POSITION	1950	794	REFLECTOR 2 POSITION 24	1950
218	REFL 1 POS 7	2149	796	REFL 1 POS 24 2ND LOOK	2149
220	REFL 2 POS 7	1950	798	REFL 2 POS 24 2ND LOOK	1950
222	NADIR SAMPLE	16223	800	NADIR SAMPLE	16218
224	CH	16663	802	CH	16664
226	CH	17002	804	CH	17000
228	CH	16808	806	CH	16809
230	CH	16391	808	CH	16392
232	CH	16381	810	CH	16381
234	CH	17503	812	CH	17500
236	CH	16873	814	CH	16873
238	CH	18875	816	CH	18879
240	CH	18770	818	CH	18768
242	CH	18204	820	CH	18203
244	CH	20201	822	CH	20189
246	CH	16793	824	CH	16796
248	REFLECTOR 1 POSITION	2149	826	REFLECTOR 1 POSITION 25	2149
250	REFLECTOR 2 POSITION	1950	828	REFLECTOR 2 POSITION 25	1950
252	REFL 1 POS 8	2149	830	REFL 1 POS 25 2ND LOOK	2149
254	REFL 2 POS 8	1950	832	REFL 2 POS 25 2ND LOOK	1950
256	NADIR SAMPLE	16221	834	NADIR SAMPLE	16223
258	CH	16663	836	CH	16667
260	CH	17001	838	CH	16999
262	CH	16806	840	CH	16808
264	CH	16390	842	CH	16391
266	CH	16380	844	CH	16380
268	CH	17499	846	CH	17499
270	CH	16876	848	CH	16872
272	CH	18871	850	CH	18874
274	CH	18760	852	CH	18755
276	CH	18203	854	CH	18189
278	CH	20206	856	CH	20221
280	CH	16793	858	CH	16792
282	REFLECTOR 1 POSITION	2149	860	REFLECTOR 1 POSITION 26	2149
284	REFLECTOR 2 POSITION	1950	862	REFLECTOR 2 POSITION 26	1950
286	REFL 1 POS 9	2149	864	REFL 1 POS 26 2ND LOOK	2149
288	REFL 2 POS 9	1950	866	REFL 2 POS 26 2ND LOOK	1950
290	NADIR SAMPLE	16225	868	NADIR SAMPLE	16225
292	CH	16663	870	CH	16663

ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
294	CH 5	17000	872	CH 5	16997
296	CH 6	16806	874	CH 6	16807
298	CH 7	16390	876	CH 7	16388
300	CH 8	16382	878	CH 8	16382
302	CH 9	17498	880	CH 9	17504
304	CH 10	16869	882	CH 10	16879
306	CH 11	18873	884	CH 11	18871
308	CH 12	18767	886	CH 12	18773
310	CH 13	18201	888	CH 13	18212
312	CH 14	20209	890	CH 14	20215
314	CH 15	16793	892	CH 15	16791
316	REFLECTOR 1 POSITION 10	2149	894	REFLECTOR 1 POSITION 27	2149
318	REFLECTOR 2 POSITION 10	1950	896	REFLECTOR 2 POSITION 27	1950
320	REFL 1 POS 10 2ND LOOK	2149	898	REFL 1 POS 27 2ND LOOK	2149
322	REFL 2 POS 10 2ND LOOK	1950	900	REFL 2 POS 27 2ND LOOK	1950
324	NADIR SAMPLE 10	16223	902	NADIR SAMPLE 27	16217
326	CH 3	16661	904	CH 3	16666
328	CH 4	16997	906	CH 4	16999
330	CH 5	16809	908	CH 5	16807
332	CH 6	16393	910	CH 6	16390
334	CH 7	16381	912	CH 7	16377
336	CH 8	17501	914	CH 8	17502
338	CH 9	16874	916	CH 9	16872
340	CH 10	18868	918	CH 10	18869
342	CH 11	18765	920	CH 11	18769
344	CH 12	18204	922	CH 12	18209
346	CH 13	20234	924	CH 13	20200
348	CH 14	16795	926	CH 14	16793
350	CH 15	2149	928	CH 15	2149
352	REFLECTOR 1 POSITION 11	1950	930	REFLECTOR 1 POSITION 28	1950
354	REFLECTOR 2 POSITION 11	2149	932	REFLECTOR 2 POSITION 28	2149
356	REFL 1 POS 11 2ND LOOK	1950	934	REFL 1 POS 28 2ND LOOK	1950
358	REFL 2 POS 11 2ND LOOK	16224	936	REFL 2 POS 28 2ND LOOK	16219
360	NADIR SAMPLE 11	16663	938	NADIR SAMPLE 28	16666
362	CH 3	17003	940	CH 3	17002
364	CH 4	16809	942	CH 4	16811
366	CH 5	16387	944	CH 5	16393
368	CH 6	16385	946	CH 6	16379
370	CH 7	17501	948	CH 7	17501
372	CH 8	16872	950	CH 8	16876
374	CH 9	18864	952	CH 9	18878
376	CH 10	18765	954	CH 10	18761
378	CH 11	18208	956	CH 11	18202
380	CH 12	20201	958	CH 12	20210
382	CH 13	16794	960	CH 13	16793
384	CH 14	2149	962	CH 14	2149
386	CH 15	1950	964	CH 15	1950
388	REFLECTOR 1 POSITION 12	2149	966	REFLECTOR 1 POSITION 29	2149
390	REFLECTOR 2 POSITION 12	1950	968	REFLECTOR 2 POSITION 29	1950
392	REFL 1 POS 12 2ND LOOK	16218	970	REFL 1 POS 29 2ND LOOK	16215
	REFL 2 POS 12 2ND LOOK			REFL 2 POS 29 2ND LOOK	
	NADIR SAMPLE 12			NADIR SAMPLE 29	

LEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE
394	CH 4	16664	972	REFLECTOR 1 POSITION 30	16662
396	CH 5	16999	974	REFLECTOR 2 POSITION 30	17001
398	CH 6	16811	976	REFL 1 POS 30	16804
400	CH 7	16391	978	REFL 2 POS 30	16390
402	CH 8	16382	980	NADIR SAMPLE	16385
404	CH 9	17505	982		17501
406	CH 10	16877	984		16866
408	CH 11	18873	986		18875
410	CH 12	18760	988		18756
412	CH 13	18208	990		18198
414	CH 14	20205	992		20209
416	CH 15	16792	994		16791
418	REFLECTOR 1 POSITION 13	2149	996		2149
420	REFLECTOR 2 POSITION 13	1950	998		1950
422	REFL 1 POS 13	2149	1000		2149
424	REFL 2 POS 13	1950	1002		1950
426	NADIR SAMPLE	16224	1004		16226
428		16666	1006		16664
430		17002	1008		17001
432		16807	1010		16807
434		16393	1012		16390
436		16380	1014		16382
438		17502	1016		17502
440		16870	1018		16876
442		18875	1020		18869
444		18774	1022		18756
446		18208	1024		18216
448		20221	1026		20208
450		16791	1028		16792
452	REFLECTOR 1 POSITION 14	2149	1030	REFLECTOR 1 COLD CAL POS	0EE
454	REFLECTOR 2 POSITION 14	1950	1032	REFLECTOR 2 COLD CAL POS	0EE
456	REFL 1 POS 14	2149	1034	REFL 1 COLD CAL 2ND LOOK	0EE
458	REFL 2 POS 14	1950	1036	REFL 2 COLD CAL 2ND LOOK	0EE
460	NADIR SAMPLE	16224	1038	COLD CAL DATA 1	0
462		16666	1040		0
464		17000	1042		0
466		16807	1044		0
468		16389	1046		0
470		16382	1048		0
472		17503	1050		0
474		16877	1052		0
476		18876	1054		0
478		18772	1056		0
480		18207	1058		0
482		20225	1060		0
484		16793	1062		0
486	REFLECTOR 1 POSITION 15	2149	1064	COLD CAL DATA 2	0
488	REFLECTOR 2 POSITION 15	1950	1066		0
490	REFL 1 POS 15	2149	1068		0
492	REFL 2 POS 15	1950	1070		0

AMSU A1_17	A1.EXE;62	DIGITAL A DATA	16-MAR-99	08:22:55	PAGE	6
ELEMENT	DESCRIPTION	VALUE	ELEMENT	DESCRIPTION	VALUE	VALUE
494	NADIR SAMPLE	15	1072		CH	7
496			1074		CH	8
498			1076		CH	9
500			1078		CH	10
502			1080		CH	11
504			1082		CH	12
506			1084		CH	13
508			1086		CH	14
510			1088		CH	15
512			1182	REFLECTOR 1 WARM CAL POS	0E	0E
514			1184	REFLECTOR 2 WARM CAL POS	0E	0E
516			1186	REFL 1 WARM CAL 2ND LOOK	0E	0E
518			1188	REFL 2 WARM CAL 2ND LOOK	0E	0E
520	REFLECTOR 1 POSITION 16	16	1190	WARM CAL DATA 1	CH	3
522	REFLECTOR 2 POSITION 16	16	1192		CH	4
524	REFL 1 POS 16	16	1194		CH	5
526	REFL 2 POS 16	16	1196		CH	6
528	NADIR SAMPLE	16	1198		CH	7
530			1200		CH	8
532			1202		CH	9
534			1204		CH	10
536			1206		CH	11
538			1208		CH	12
540			1210		CH	13
542			1212		CH	14
544			1214		CH	15
546			1216		CH	3
548			1218		CH	4
550			1220		CH	5
552			1222		CH	6
554	REFLECTOR 1 POSITION 17	17	1224		CH	7
556	REFLECTOR 2 POSITION 17	17	1226		CH	8
558	REFL 1 POS 17	17	1228		CH	9
560	REFL 2 POS 17	17	1230		CH	10
562	NADIR SAMPLE	17	1232		CH	11
564			1234		CH	12
566			1236		CH	13
568			1238		CH	14
570			1240		CH	15
			16218			
			16664			
			17002			
			16808			
			16393			
			16381			
			17499			
			16875			
			18878			
			18768			
			18197			
			20214			
			16792			
			2149			
			1950			
			2149			
			1950			
			16226			
			16664			
			17004			
			16807			
			16392			
			16381			
			17501			
			16881			
			18873			
			18763			
			18203			
			20225			
			16791			
			2149			
			1950			
			2149			
			1950			
			16667			
			17004			
			16807			
			16391			
				WARM CAL DATA 2		

ELEMENT	DESCRIPTION	VALUE	TEMPERATURE	DEG C
1090	SCAN MOTOR A1-1	16441	20.42	
1092	SCAN MOTOR A1-2	16848	20.78	
1094	FEEDHORN A1-1	17687	22.03	
1096	FEEDHORN A1-2	18362	21.90	
1098	RF MUX A1-1	18279	23.70	
1100	RF MUX A1-2	18788	24.95	
1102	LOCAL OSCILLATOR CHANNEL 3	19798	26.65	
1104	LOCAL OSCILLATOR CHANNEL 4	19958	26.88	
1106	LOCAL OSCILLATOR CHANNEL 5	19792	26.31	
1108	LOCAL OSCILLATOR CHANNEL 6	18400	24.03	
1110	LOCAL OSCILLATOR CHANNEL 7	18786	24.67	
1112	LOCAL OSCILLATOR CHANNEL 8	19447	26.33	
1114	LOCAL OSCILLATOR CHANNEL 15	19340	26.75	
1116	PLL LO #2 CHANNELS 9 THROUGH 14	17942	23.77	
1118	PLL LO #1 CHANNELS 9 THROUGH 14	21014	29.45	
1120	SPARE (NOT USED)	32767	52.86	
1122	MIXER/IF AMPLIFIER CHANNEL 3	19320	25.42	
1124	MIXER/IF AMPLIFIER CHANNEL 4	19010	25.58	
1126	MIXER/IF AMPLIFIER CHANNEL 5	19099	25.49	
1128	MIXER/IF AMPLIFIER CHANNEL 6	18583	24.22	
1130	MIXER/IF AMPLIFIER CHANNEL 7	18764	24.67	
1132	MIXER/IF AMPLIFIER CHANNEL 8	18915	25.61	
1134	MIXER/IF AMPLIFIER CH 9 THRU 14	18010	23.87	
1136	MIXER/IF AMPLIFIER CHANNEL 15	19320	26.23	
1138	IF AMPLIFIER CHANNEL 11 THRU 14	19360	26.13	
1140	IF AMPLIFIER CHANNEL 9	19794	26.15	
1142	IF AMPLIFIER CHANNEL 10	19412	26.36	
1144	IF AMPLIFIER CHANNEL 11	18408	23.89	
1146	DC/DC CONVERTER	20987	28.72	
1148	IF AMPLIFIER CHANNEL 13	18587	23.96	
1150	IF AMPLIFIER CHANNEL 14	18204	23.85	
1152	IF AMPLIFIER CHANNEL 12	18178	23.79	
1154	RF SHELF A1-1	19024	25.12	
1156	RF SHELF A1-2	18970	25.19	
1158	DETECTOR/PREAMPLIFIER ASSEMBLY	17804	22.48	
1160	A1-1 WARM LOAD 1	21362	20.19	
1162	A1-1 WARM LOAD 2	21562	20.22	
1164	A1-1 WARM LOAD 3	21614	20.26	
1166	A1-1 WARM LOAD 4	21322	20.27	
1168	A1-1 WARM LOAD CENTER	21506	20.30	
1170	A1-2 WARM LOAD 1	21883	20.67	
1172	A1-2 WARM LOAD 2	21709	20.64	
1174	A1-2 WARM LOAD 3	21744	20.71	
1176	A1-2 WARM LOAD 4	21674	20.70	
1178	A1-2 WARM LOAD CENTER	21538	20.57	
1180	TEMP SENSOR REFERENCE VOLTAGE	24883		

DESCRIPTION

STATUS

STATUS

STATUS

DESCRIPTION	STATUS	STATUS	STATUS
SCANNER A1-1 POWER	ON		
SCANNER A1-2 POWER	ON		
PLL POWER	ON	PLLO # 1	PLLO # 1
ANTENNA IN WARM CAL POSITION MODE	NO	NO	NO
ANTENNA IN COLD CAL POSITION MODE	NO	NO	NO
ANTENNA IN NADIR POSITION MODE	YES	YES	YES
ANTENNA IN FULL SCAN MODE	NO	NO	NO
SURVIVAL HEATER POWER	OFF	OFF	OFF
MODULE POWER	CONNECT	CONNECT	CONNECT
COLD CAL POSITION MSB	ZERO	ZERO	ZERO
COLD CAL POSITION LSB	ZERO	ZERO	ZERO

ANALOG DATA

DESCRIPTION	VALUE	DEG C	VALUE	DEG C	VALUE	DEG C
A1-1 SCANNER MOTOR TEMPERATURE	214	24.9	214	24.9	214	24.9
A1-2 SCANNER MOTOR TEMPERATURE	214	24.5	214	24.5	214	24.5
A1-1 RF SHELF TEMPERATURE	215	22.0	215	22.0	215	22.0
A1-2 RF SHELF TEMPERATURE	214	22.9	214	22.9	214	22.9
A1-1 WARM LOAD TEMPERATURE	214	23.8	214	23.8	214	23.8
A1-2 WARM LOAD TEMPERATURE	214	23.9	214	23.9	214	23.9

DESCRIPTION

VALUE

AMPS/
VOLTS

VALUE

AMPS/
VOLTS

DESCRIPTION	VALUE	AMPS/ VOLTS	VALUE	AMPS/ VOLTS	VALUE	AMPS/ VOLTS
A1-1 ANTENNA DRIVE MOTOR CURRENT (AVRG)	4	1.86	4	1.86	4	1.86
A1-2 ANTENNA DRIVE MOTOR CURRENT (AVRG)	4	1.86	4	1.86	4	1.86
SIGNAL PROCESSING +15 VDC	167	14.91	167	14.91	167	14.91
ANTENNA DRIVE +15 VDC	167	14.66	167	14.66	167	14.66
SIGNAL PROCESSING -15 VDC	150	-15.00	150	-15.00	150	-15.00
ANTENNA DRIVE -15 VDC	149	-14.95	149	-14.95	149	-14.95
RECEIVER AMPLIFIER +8 VDC	157	8.05	157	8.05	157	8.05
SIGNAL PROCESSOR +5 VDC	143	5.07	143	5.07	143	5.07
ANTENNA DRIVE +5 VDC	143	5.02	143	5.02	143	5.02
RECEIVER MIXER/IF +10 VDC	167	10.03	167	10.03	167	10.03
PHASE LOCK LOOP (CHANNEL 9/14)	167	14.99	167	14.99	167	14.99
PHASE LOCK LOOP (CHANNEL 9/14)	142	-14.90	142	-14.90	142	-14.90
L.O. VOLTAGE (CHANNEL 8)	172	10.00	172	10.00	172	10.00
L.O. VOLTAGE (CHANNEL 7)	170	10.06	170	10.06	170	10.06
L.O. VOLTAGE (CHANNEL 6)	174	10.06	174	10.06	174	10.06
L.O. VOLTAGE (CHANNEL 3)	173	10.00	173	10.00	173	10.00
L.O. VOLTAGE (CHANNEL 4)	173	10.00	173	10.00	173	10.00
L.O. VOLTAGE (CHANNEL 5)	171	10.11	171	10.11	171	10.11
PLLO # 2 LOCK DETECT	4	0.08	4	0.08	4	0.08
PLLO # 1 LOCK DETECT	219	4.38	219	4.38	219	4.38
L.O. VOLTAGE (CHANNEL 15)	167	14.91	167	14.91	167	14.91

TEST DATA SHEET 32

Digital-A Data Output Nadir Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.4)

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
01	0018			↓	0030			↓
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038		0		1050		0	
WC	1190		0		1202		0	

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

** Required = $16,500 \pm 4000$ counts (Unless otherwise indicated).

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

Test Systems Engineer

Date

MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date



P1 16-MAR 99 08:23:42 SCAN NUMBER 281

MSU A1-17 A1.EXE:62 NADIR MODE
5] DIGITAL A DATA ELEMENT 0000

6] DIGITAL B DATA ELEMENT 00

7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA

BP		DATA		BP		DATA		BP		DATA	
		DATA	BP	DATA	BP	DATA	BP	DATA	BP	DATA	BP
1	16226	9	16222	17	16217	25	16220				
2	16217	10	16221	18	16218	26	16218				
3	16222	11	16222	19	16225	27	16215				
4	16210	12	16214	20	16222	28	16215				
5	16212	13	16215	21	16220	29	16218				
6	16218	14	16215	22	16222	30	16216				
7	16218	15	16217	23	16217	CC	0				
8	16218	16	16221	24	16222	WC	0				
		[22]	DOWN								

[21] UP

POWER [4] ON [1] RETURN

SCREEN ONLY [2] PRINT [3] FULL
SELECT TOUCHSCREEN BUTTON 2

TDS 32

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

RADIOMETRIC DATA

BP	DATA	BP	CHANNEL 9		BP	DATA	BP	DATA
			DATA	BP		DATA		
1	17496	9	17489	17	17496	25	17493	
2	17497	10	17496	18	17495	26	17492	
3	17496	11	17496	19	17495	27	17494	
4	17494	12	17492	20	17496	28	17497	
5	17494	13	17493	21	17496	29	17494	
6	17495	14	17497	22	17493	30	17496	
7	17495	15	17494	23	17493	CC	0	
8	17494	16	17498	24	17492	WC	0	

[21] UP

POWER [4] ON

SELECT TOUCHSCREEN BUTTON 2

SCREEN ONLY [2] PRINT [3] FULL

[1] RETURN

TEST DATA SHEET 33 (Sheet 1 of 2)
Nadir Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.4)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	P
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***		25 ± 15	
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	✓

* Value is from the STE printout sheets. Copying data to this sheet is optional.

** For S/N 101 through 104.

*** For S/N 105 and up.

(Continued on Sheet 2)

TEST DATA SHEET 33 (Sheet 2 of 2)
Nadir Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.4)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	P
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	✓

* Value is from the STE printout sheets. Copying data to this sheet is optional.
** = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 SN: 105

R. Hajj
Test Systems Engineer

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date



3/14/99
Quality Control

Date



1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It includes a detailed description of the experimental procedures and the statistical analysis performed.

3. The third part of the document presents the results of the study, showing the trends and patterns observed in the data. It includes several tables and figures to illustrate the findings.

4. The fourth part of the document discusses the implications of the results and the conclusions drawn from the study. It highlights the significance of the findings and their potential applications in the field.

5. The fifth part of the document provides a summary of the key points and a final conclusion. It reiterates the importance of the study and the need for further research in this area.

AMSU A1-17 A1.EXE:62 NADIR MODE P1 16-MAR-99 08:24:53 SCAN NUMBER 290
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

NO	DIGITAL A TEMPERATURES 1 TO 16		DATA	TEMP C		
	DATA	TEMP C				
1	SCAN MOTOR A1-1	16459	20.45	9 LO CHANNEL 5	19898	26.52
2	SCAN MOTOR A1-2	16879	20.84	10 LO CHANNEL 6	18458	24.14
3	FEEDHORN A1-1	17740	22.13	11 LO CHANNEL 7	18870	24.83
4	FEEDHORN A1-2	18441	22.05	12 LO CHANNEL 8	19554	26.54
5	RF MUX A1-1	18360	23.85	13 LO CHANNEL 15	19434	26.93
6	RF MUX A1-2	18900	25.16	14 PLL0 #2 CH 9/14	18029	23.94
7	LO CHANNEL 3	19910	26.86	15 PLL0 #1 CH 9/14	21114	29.65
8	LO CHANNEL 4	20070	27.10	16 PLL0 REFERENCE	32767	52.86
[21] UP						
[22] DOWN						

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

7DS 33

AMSU A1-17 A1.EXE:62 NADIR MODE
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

NO	DIGITAL A TEMPERATURES 17 TO 32										DATA	TEMP C
	DATA	TEMP C	NO	IF AMP	CH	IF AMP	CH	IF AMP	CH	IF AMP		
17	MIXER	IF	CH 3	19448	25.67	25	IF AMP	CH 11/14	19467	26.33		
18	MIXER	IF	CH 4	19139	25.83	26	IF AMP	CH 9	19902	26.36		
19	MIXER	IF	CH 5	19222	25.72	27	IF AMP	CH 10	19520	26.57		
20	MIXER	IF	CH 6	18674	24.39	28	IF AMP	CH 11	18502	24.07		
21	MIXER	IF	CH 7	18864	24.86	29	DC/DC CONVERTER		21092	28.92		
22	MIXER	IF	CH 8	19044	25.86	30	IF AMP	CH 13	18679	24.14		
23	MIXER	IF	CH 9/14	18103	24.05	31	IF AMP	CH 14	18296	24.03		
24	MIXER	IF	CH 15	19421	26.42	32	IF AMP	CH 12	18271	23.97		
[22] DOWN												
[21] UP												

[21] UP [22] DOWN

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

AMSU A1-17 A1.EXE:62 NADIR MODE
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

DIGITAL A TEMPERATURES 31 TO 46											
NO		DATA		TEMP C		NO		DATA		TEMP C	
31	IF AMP CH 14	18302	24.04	39	A1-1	WARM	LOAD	4	21333	20.29	
32	IF AMP CH 12	18277	23.98	40	A1-1	WARM	LOAD	1	21519	20.33	
33	RF SHELF A1-1	19128	25.32	41	A1-2	WARM	LOAD	1	21915	20.73	
34	RF SHELF A1-2	19097	25.44	42	A1-2	WARM	LOAD	2	21744	20.71	
35	DETECTOR/PREAMP	17878	22.63	43	A1-2	WARM	LOAD	3	21776	20.77	
36	A1-1 WARM LOAD 1	21375	20.22	44	A1-2	WARM	LOAD	4	21705	20.76	
37	A1-1 WARM LOAD 2	21580	20.26	45	A1-2	WARM	LOAD	C	21570	20.63	
38	A1-1 WARM LOAD 3	21627	20.28	THERMAL		REFERENCE			24883		
[21] UP			[22] DOWN								

POWER [4] ON SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2



TEST DATA SHEET 34
Analog Telemetry Verification by Way of Connector J6 (Paragraph 3.2.4.3.5.1)

	From	Description	To	Measured (volts)	Required (volts)	Pass/Fail
03	J6-02	RF Shelf A1-1 Temp.	J1-10	<u>4.36V</u>	3.5 ± 2 V	P
01	J6-03	A1-1 Scan Motor Temp.	J1-10	<u>4.31V</u>	3.5 ± 2 V	
05	J6-04	Warm Load A1-1 Temp.	J1-10	<u>4.32V</u>	3.5 ± 2 V	
04	J6-21	RF Shelf A1-2 Temp.	J1-10	<u>4.39V</u>	3.5 ± 2 V	
02	J6-22	A1-2 Scan Motor Temp.	J1-10	<u>4.34V</u>	3.5 ± 2 V	
06	J6-23	Warm Load A1-2 Temp.	J1-10	<u>4.35V</u>	3.5 ± 2 V	
25	J6-06	PLLO No. 2 Lock detect	J2-03	<u>2.07V</u>	***	P
07	J6-08	A1-1 Drive Motor Curr.	J2-03	<u>2.02V</u>	3.5 ± 2 V	
10	J6-09	+15 V Antenna Drive	J2-03	<u>3.82V</u>	3.5 ± 2 V	
15	J6-10	+5 V Antenna Drive	J2-03	<u>2.99V</u>	3.5 ± 2 V	
09	J6-11	+15 V Signal Processing	J2-03	<u>3.47V</u>	3.5 ± 2 V	
14	J6-12	+5 V Signal Processing	J2-03	<u>2.96V</u>	3.5 ± 2 V	
22	J6-13	L.O. Voltage Channel 3	J2-03	<u>3.51V</u>	3.5 ± 2 V	
24	J6-14	L.O. Voltage Channel 5	J2-03	<u>3.49V</u>	3.5 ± 2 V	
20	J6-15	L.O. Voltage Channel 7	J2-03	<u>3.48V</u>	3.5 ± 2 V	
16	J6-16	+15 V PLL LO Ch 9-14	J2-03	<u>3.43V</u>	3.5 ± 2 V	
17	J6-17	*	J2-03	<u>3.44V</u>	3.5 ± 2 V	
27	J6-18	L.O. Voltage Channel 15	J2-03	<u>3.46V</u>	3.5 ± 2 V	
26	J6-25	PLLO No. 1 Lock detect	J2-03	<u>4.43V</u>	***	
08	J6-27	A1-2 Drive Motor Curr.	J2-03	<u>2.00V</u>	3.5 ± 2 V	
12	J6-28	-15 V Antenna Drive	J2-03	<u>3.04V</u>	3.5 ± 2 V	
11	J6-29	-15 V Signal Processing	J2-03	<u>3.04V</u>	3.5 ± 2 V	
23	J6-30	L.O. Voltage Channel 4	J2-03	<u>3.50V</u>	3.5 ± 2 V	
21	J6-31	L.O. Voltage Channel 6	J2-03	<u>3.48V</u>	3.5 ± 2 V	
19	J6-32	L.O. Voltage Channel 8	J2-03	<u>3.49V</u>	3.5 ± 2 V	
18	J6-33	-15 V PLL LO Ch 9-14	J2-03	<u>2.90V</u>	3.5 ± 2 V	
13	J6-34	**	J2-03	<u>3.19V</u>	3.5 ± 2 V	

* +8.5 V PLL LO Ch 9-14 for S/N 101-104, +10V Mixer Amp for S/N 105 and above.

** +8 V Receiver for S/N 101-104, +8 V IF Amp for S/N 105 and above.

*** 4.5 ± 0.5 when locked, 0.5 ± 0.5 when unlocked or OFF. One must be locked.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

R. Hoist
Test Systems Engineer

Date

3/14/89



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date



Quality Control

Date

3/16/99

TEST DATA SHEET 35 (Sheet 1 of 2)
Analog Telemetry Signals by Way of the STE (Paragraph 3.2.4.3.5.2)

	Description	(*)	Measured (Deg. C)	Required (Deg. C)	Pass/Fail
01	A1-1 Scanner Motor	Temp	_____	25 ± 15	<u>P</u>
02	A1-2 Scanner Motor	Temp	_____	25 ± 15	<u>P</u>
03	A1-1 RF Shelf	Temp	_____	25 ± 15	<u>P</u>
04	A1-2 RF Shelf	Temp	_____	25 ± 15	<u>P</u>
05	A1-1 Warm Load	Temp	_____	25 ± 15	<u>P</u>
06	A1-2 Warm Load	Temp	_____	25 ± 15	<u>P</u>
			(mAmps)	(mAmps)	
07	Ant A1-1 Drv Motor Current		_____	125 mA (Max)	<u>P</u>
08	Ant A1-2 Drv Motor Current		_____	125 mA (Max)	<u>P</u>

(*) Data from the printout sheet. Rewriting data on this space is optional.

(Continued on sheet 2)

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105
R. Harris 3/16/99

Test Systems Engineer _____ Date _____

MAR 17 1999

Customer Representative _____ Date _____
(Flight Hardware Only)

450 3/16/99
Quality Control _____ Date _____

TEST DATA SHEET 35 (Sheet 2 of 2)
Analog Telemetry Signals by Way of the STE (Paragraph 3.2.4.3.5.2)

	Description	(*)	Measured (volts)	Required (volts)	Pass/ Fail
09	Signal Processing	+15 V	_____	15.0 ± 0.5 V	<input checked="" type="checkbox"/>
10	Antenna Drive	+15 V	_____	15.0 ± 0.5 V	<input checked="" type="checkbox"/>
11	Signal Processing	-15 V	_____	-15.0 ± 0.5 V	<input checked="" type="checkbox"/>
12	Antenna Drive	-15 V	_____	-15.0 ± 0.5 V	<input checked="" type="checkbox"/>
13	Receiver	+8 V	_____	8.0 ± 0.5 V	<input checked="" type="checkbox"/>
14	Sig Processing	+5 V	_____	5.0 ± 0.5 V	<input checked="" type="checkbox"/>
15	Antenna Drive	+5 V	_____	5.0 ± 0.5 V	<input checked="" type="checkbox"/>
16	Phase Lock Loop Ch 9-14 (a)/	+8.5 V	_____	8.5 ± 0.5 V	<input checked="" type="checkbox"/>
	Receiver/Mixer IF (b)	+10 V	_____	10.0 ± 0.5 V	<input checked="" type="checkbox"/>
17	Phase Lock Loop Ch 9-14	+15 V	_____	15.0 ± 0.5 V	<input checked="" type="checkbox"/>
18	Phase Lock Loop Ch 9-14	-15 V	_____	-15.0 ± 0.5 V	<input checked="" type="checkbox"/>
19	L.O. #8	Ch-8	<u>10.04V</u>	(**)__ ± 0.5 V	<input checked="" type="checkbox"/>
20	L.O. #7	Ch-7	<u>10.13V</u>	(**)__ ± 0.5 V	<input checked="" type="checkbox"/>
21	L.O. #6	Ch-6	<u>10.06V</u>	(**)__ ± 0.5 V	<input checked="" type="checkbox"/>
22	L.O. #3	Ch-3	<u>10.03V</u>	(**)__ ± 0.5 V	<input checked="" type="checkbox"/>
23	L.O. #4	Ch-4	<u>10.02V</u>	(**)__ ± 0.5 V	<input checked="" type="checkbox"/>
24	L.O. #5	Ch-5	<u>10.16V</u>	(**)__ ± 0.5 V	<input checked="" type="checkbox"/>
25	PLLO No. 2 Lock Detect		<u>4.40V</u>	(***)	<input checked="" type="checkbox"/>
26	PLLO No. 1 Lock Detect		<u>.08V</u>	(***)	<input checked="" type="checkbox"/>
27	L.O. #15	Ch-15	<u>14.91V</u>	(**)__ ± 0.5 V	<input checked="" type="checkbox"/>

(*) Data from the printout sheet. Rewriting data on this space is optional.

(**) GDO voltages from the manufacturer data sheet for S/N 101-104; DRO CH3-8 10V, GDO CH15 15V for S/N 105 and above.

(***) Locked PLO voltage 0 to +15 V, other PLO voltage ±15.0 V; one must be locked for S/N 101-104. Locked PLO voltage 4.0 ± 1.0 V, other PLO voltage 0.0 ± 0.2 V, one must be locked for S/N 105 and above.

(a) For S/N 101 through 104. (b) For S/N 105 and up.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 1105

R. Blair
Test Systems Engineer

Date



MAR 17 1999

Customer Representative

Date



Quality Control

3/16/99

Date

AMSU A1-17 A1.EXE:62 FULL SCAN MODE P2 16-MAR-99 08:58:42 SCAN NUMBER 102
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

ANALOG DATA 1 TO 18

1 A1-1 SCANR MOTOR	214	25.02	DEG C	10	ANTENNA DRIVE	15VDC	15.01
2 A1-2 SCANR MOTOR	214	25.86	DEG C	11	SIGNAL PROCESSING	-15VDC	-15.00
3 A1-1 RF SHELF	215	23.37	DEG C	12	ANTENNA DRIVE	-15VDC	-14.91
4 A1-2 RF SHELF	219	28.62	DEG C	13	RECEIVER AMPLIFIER	8VDC	8.09
5 A1-1 WARM LOAD	214	24.74	DEG C	14	SIGNAL PROCESSOR	5 VDC	5.07
6 A1-2 WARM LOAD	214	25.25	DEG C	15	ANTENNA DRIVE	5 VDC	5.07
7 ANT A1-1 DRIVE MOTOR CURRENT		45.67		16	RECEIVER MIXER/IF	10VDC	10.03
8 ANT A1-2 DRIVE MOTOR CURRENT		43.97		17	PHASE LOCK LOOP CH9/14	15VDC	14.99
9 SIGNAL PROCESSING		+15VDC		18	PHASE LOCK LOOP CH9/14	-15VDC	-14.85
[21] UP		[22] DOWN					

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

7DS35

AMSU A1-17 A1.EXE:62 FULL SCAN MODE P2 16-MAR-99 08:58:33 SCAN NUMBER 100
 [5] DIGITAL A DATA ELEMENT 0000
 [6] DIGITAL B DATA ELEMENT 00
 [7] ANALOG DATA ELEMENT 00

ANALOG DATA 10 TO 27

Channel	Function	Value	Unit	Channel	Function	Value	Unit
10	ANTENNA DRIVE	15VDC		CH 8	VOLTAGE	10.04	
11	SIGNAL PROCESSING	-15VDC		CH 7	VOLTAGE	10.13	
12	ANTENNA DRIVE	-15VDC		CH 6	VOLTAGE	10.06	
13	RECEIVER AMPLIFIER	8VDC		CH 3	VOLTAGE	10.03	
14	SIGNAL PROCESSOR	5 VDC		CH 4	VOLTAGE	10.02	
15	ANTENNA DRIVE	5 VDC		CH 5	VOLTAGE	10.16	
16	RECEIVER MIXER/IF	10VDC				4.40	
17	PHASE LOCK LOOP CH9/14	15VDC				0.08	
18	PHASE LOCK LOOP CH9/14	-15VDC				14.91	
[21] UP		[22] DOWN					

POWER [4] ON
 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN
 SELECT TOUCHSCREEN BUTTON 2

10 Mar 99

TEST DATA SHEET 36
Integrate/Hold and Dump Signal Verification (Paragraph 3.2.4.3.6.1)

ATTACH PHOTOGRAPH OR PLOT HERE

Parameter	Measured	Required	Pass/ Fail
Scope Channel-1: Integration/Hold			
Time Measured (A)*	165 ms	165 ms \pm 10%	P
Time Measured (B)*	37.5 ms	35 ms \pm 10%	P
Amplitude Measured	5.0 V	5.0 \pm 0.2 V	P
Scope Channel-2: Dump Signal			
Time Measured (D)*	12.5 ms	9 ms to 15 ms	P
Amplitude Measured	5.0 V _{ms}	5.0 \pm 0.2 V	P

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order:

373234 SN# 105

Test Systems Engineer

Date

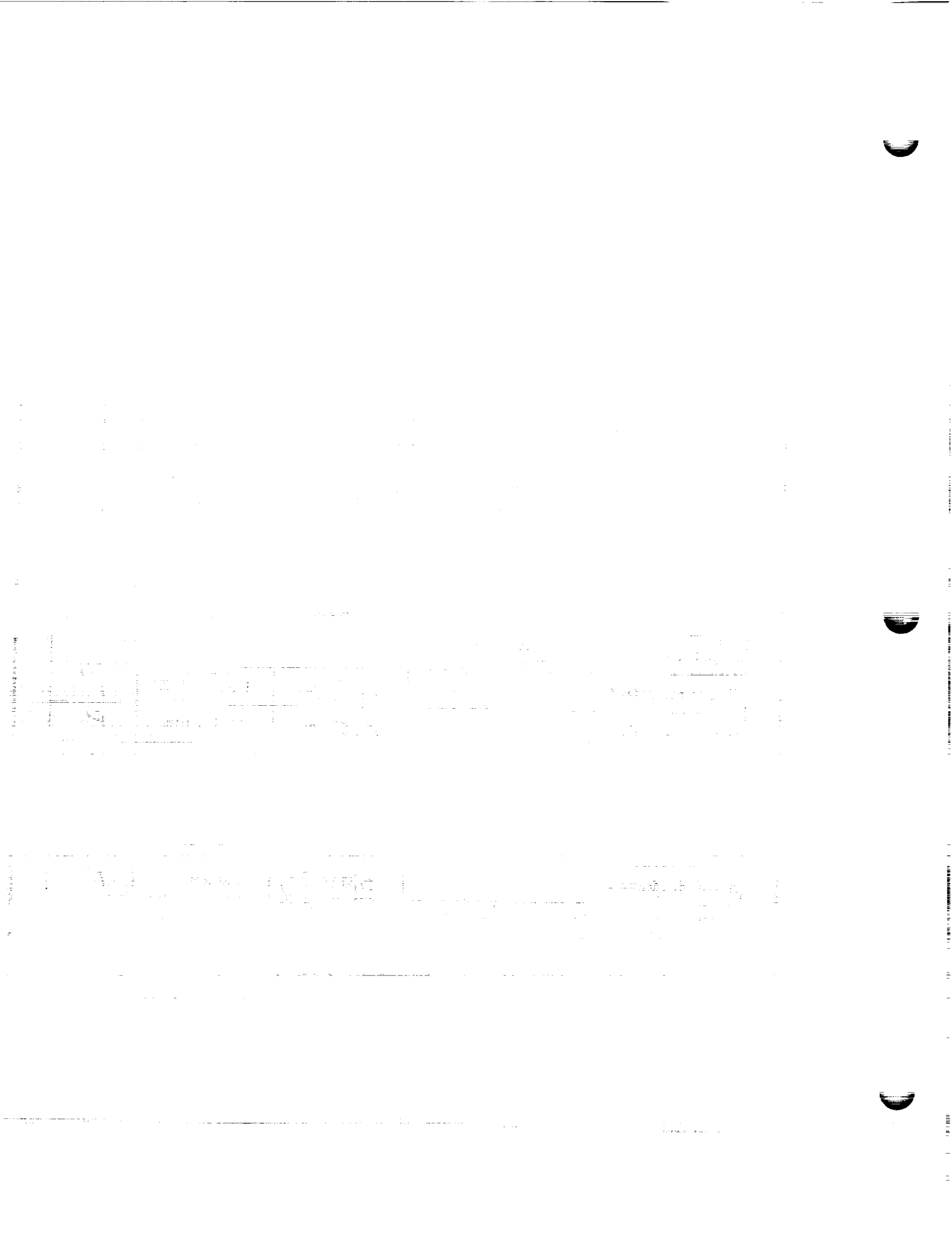
Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

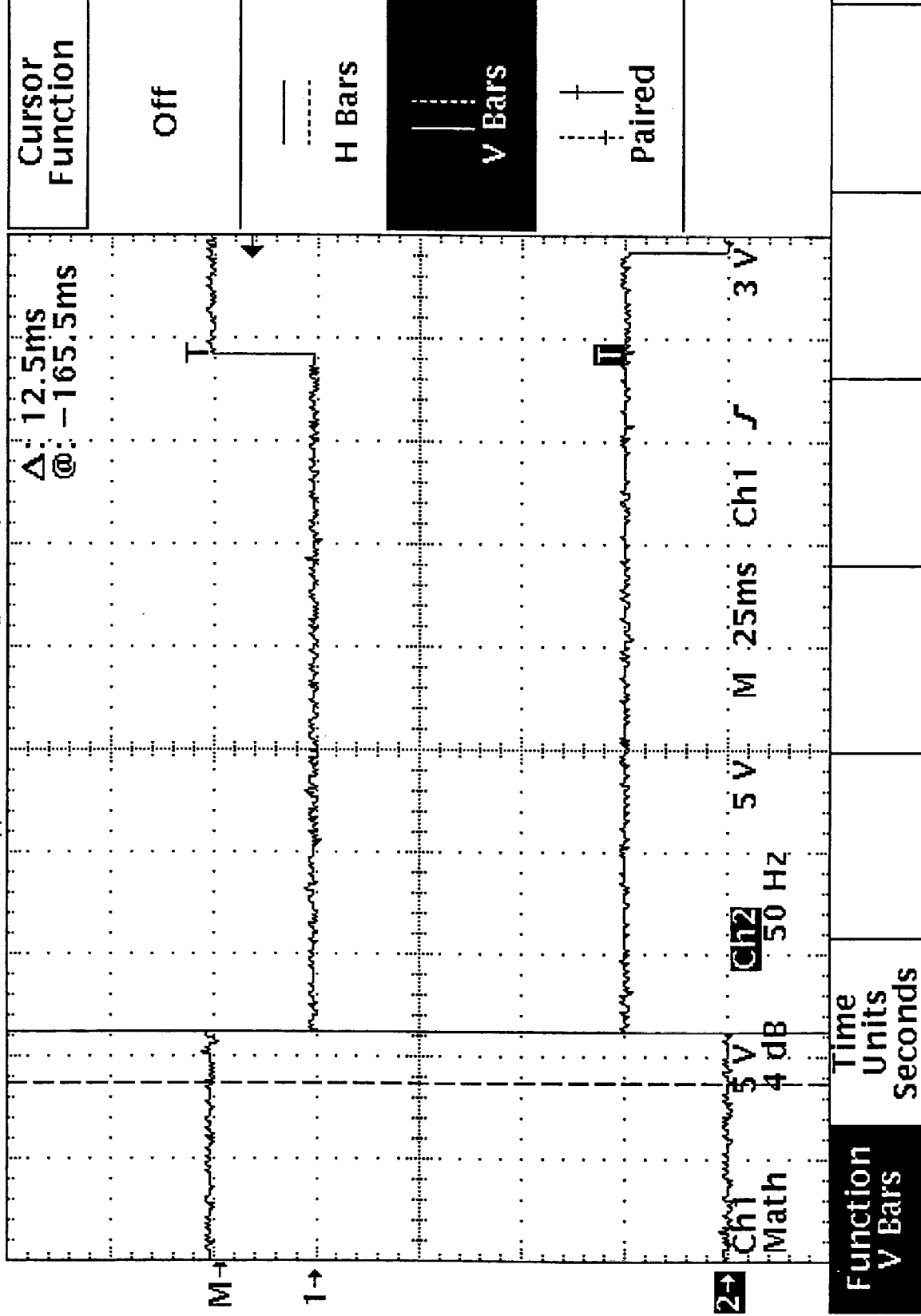
MAR 17 1999



Tek Stop: 2ks/s

64 Acqs

TDS 36





TEST DATA SHEET 37
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 03
Frequency: 50.3 GHz

INTEGRATION (X) *
Measured 165 ms
Required 165 ms \pm 10%
Pass/Fail P

HOLD (B-D) *
Measured 25 ms
Required 25 ms \pm 10%
Pass/Fail P

DUMP (D) *
Measured 12.5 ms
Required 9 ms to 15 ms
Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 04
Frequency: 52.8 GHz

INTEGRATION (X) *
Measured 165 ms
Required 165 ms \pm 10%
Pass/Fail P

HOLD (B-D) *
Measured 25 ms
Required 25 ms \pm 10%
Pass/Fail P

DUMP (D) *
Measured 12.5 ms
Required 9 ms to 15 ms
Pass/Fail P

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order:

373234

S/N:

105

R. Haig
Test Systems Engineer

Date

3/16/99



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

2/16/99

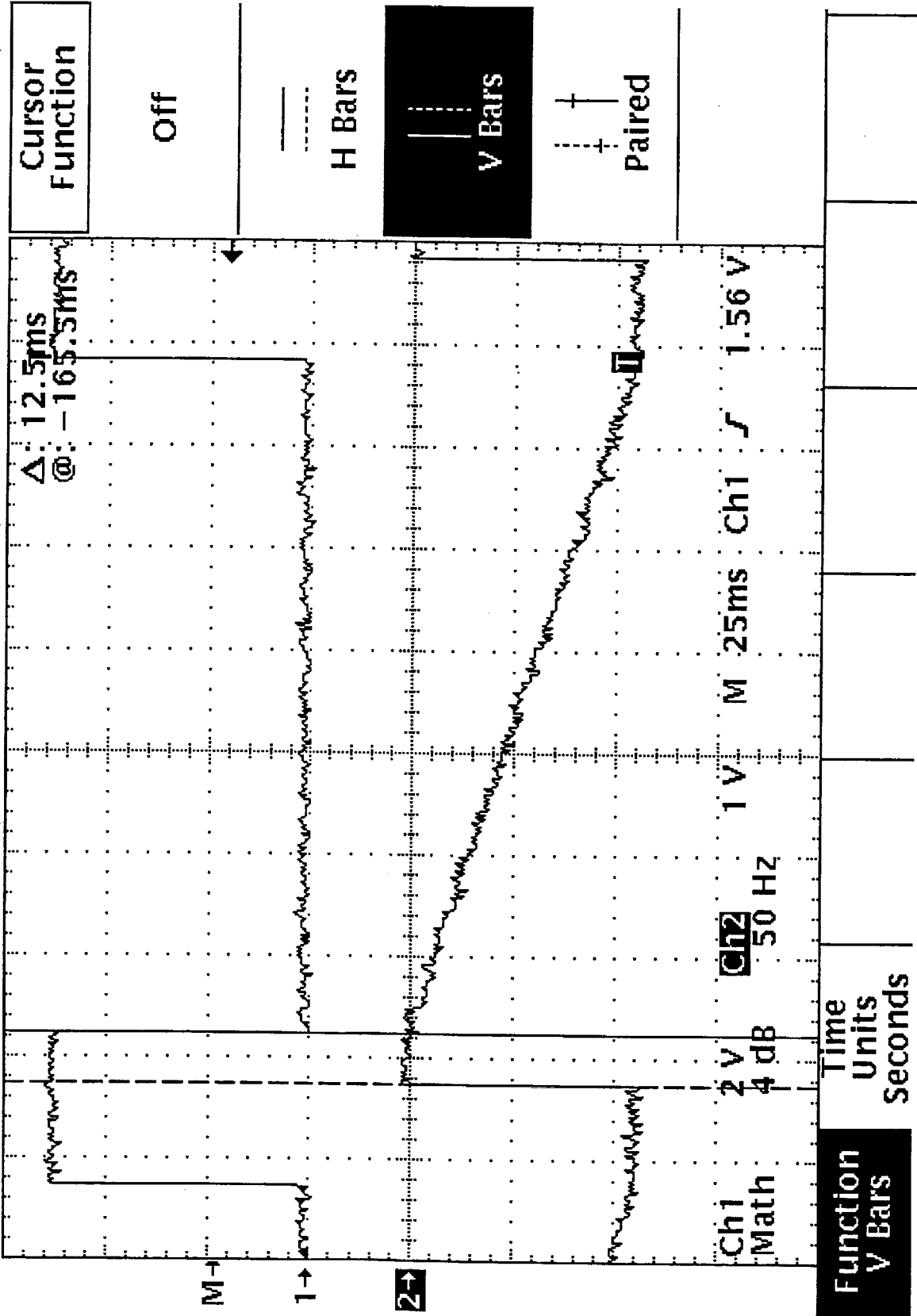


Tek Stop 2ks/s

267 Acqs

CHW 3

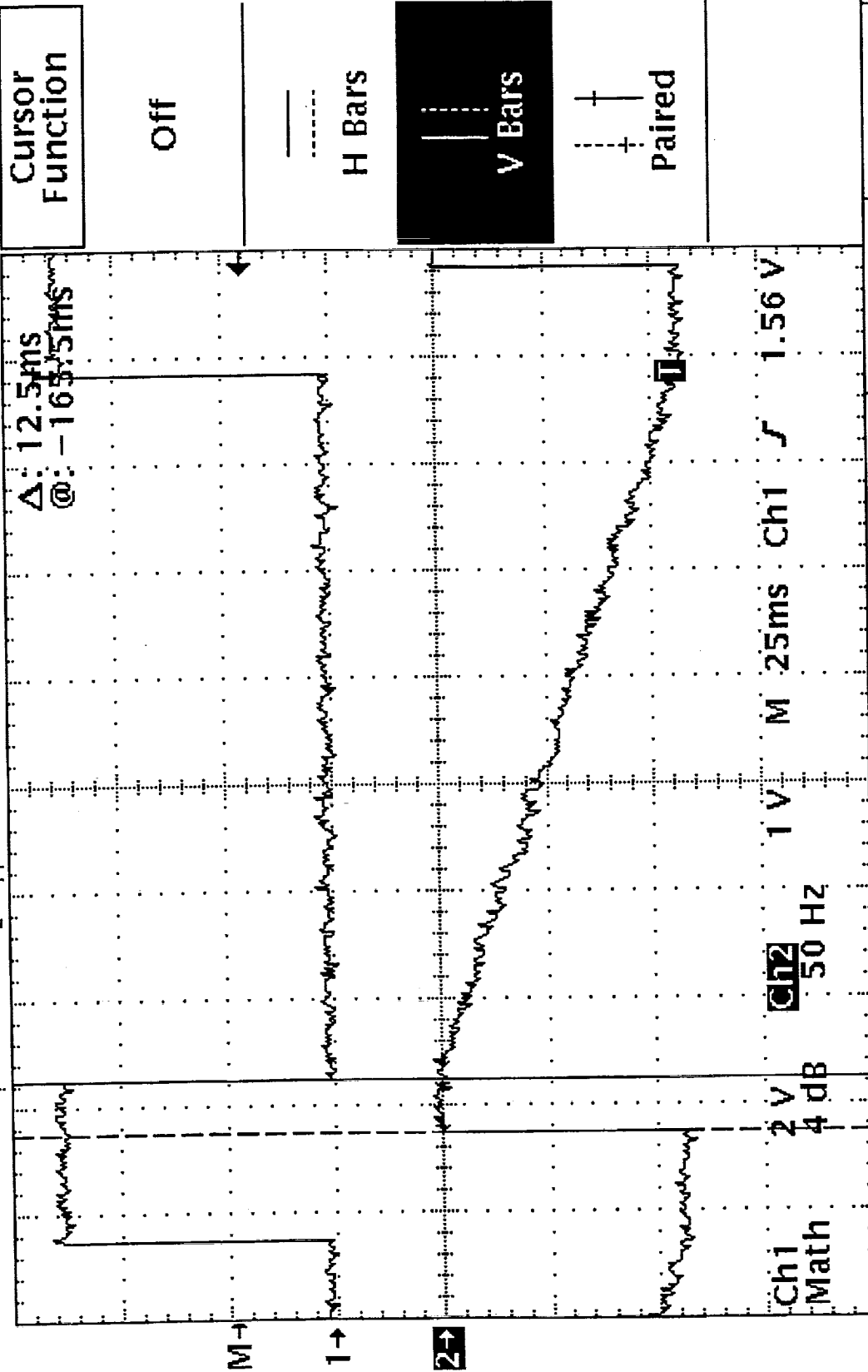
7DS 37



7DS 37
CH4

Tek Stop: 2ks/s

48 Acqs



Function	Time	Units
V Bars	Seconds	

TEST DATA SHEET 38
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 05
Frequency: 53.596 GHz

INTEGRATION (X) *
Measured 165 ms
Required 165 ms \pm 10%
Pass/Fail P

HOLD (B-D) *
Measured 25 ms
Required 25 ms \pm 10%
Pass/Fail P

DUMP (D) *
Measured 12.5 ms
Required 9 ms to 15 ms
Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 06
Frequency: 54.4 GHz

INTEGRATION (X) *
Measured 165 ms
Required 165 ms \pm 10%
Pass/Fail P

HOLD (B-D) *
Measured 25 ms
Required 25 ms \pm 10%
Pass/Fail P

DUMP (D) *
Measured 12.5 ms
Required 9 ms to 15 ms
Pass/Fail P

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234

S/N: 105

A. Haid
Test Systems Engineer

3/16/99
Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

2/16/99
Quality Control

Date

Tek Stop 2ks/s

5 Acqs

[] T]

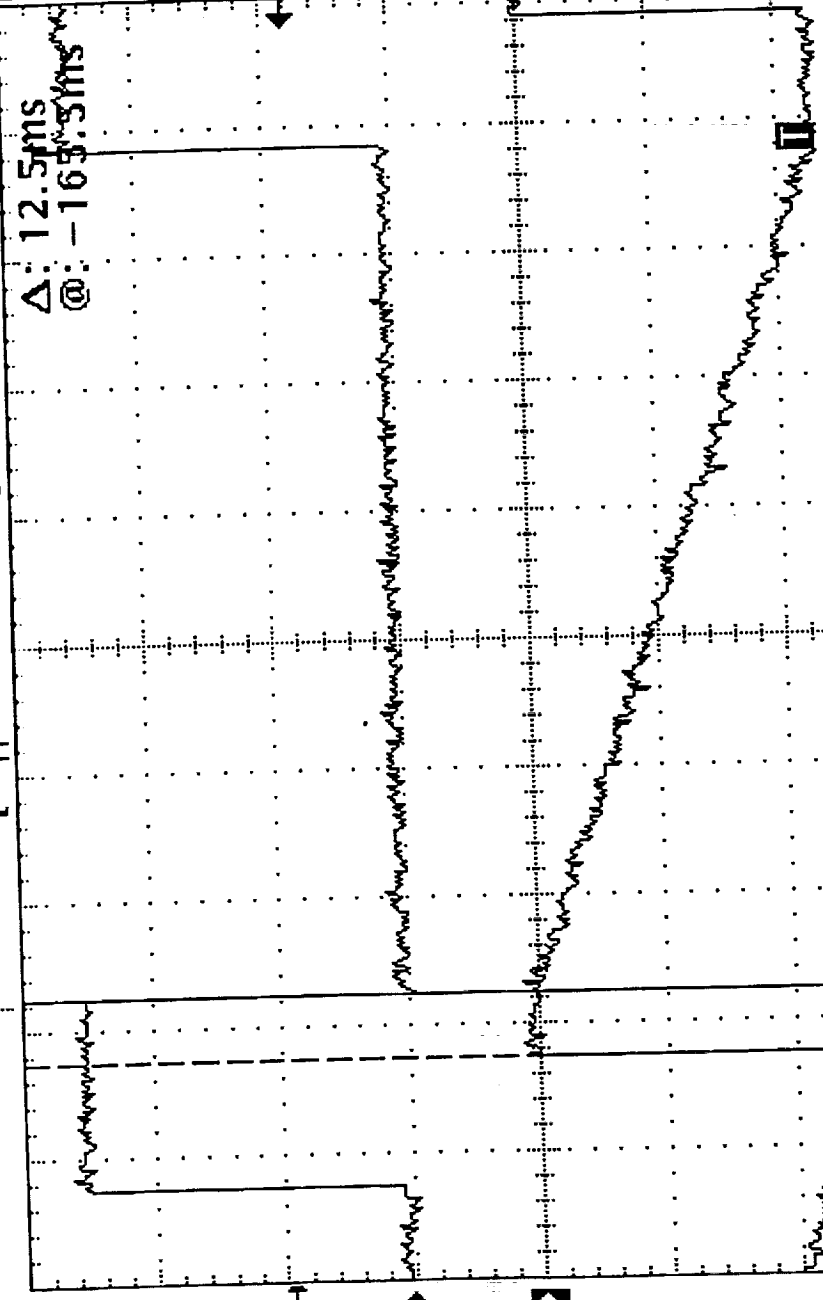
Cursor
Function

Off

H Bars

V Bars

paired



Ch1 2 V 4 dB Ch2 1 V 25ms Ch1 1.56 V

Math

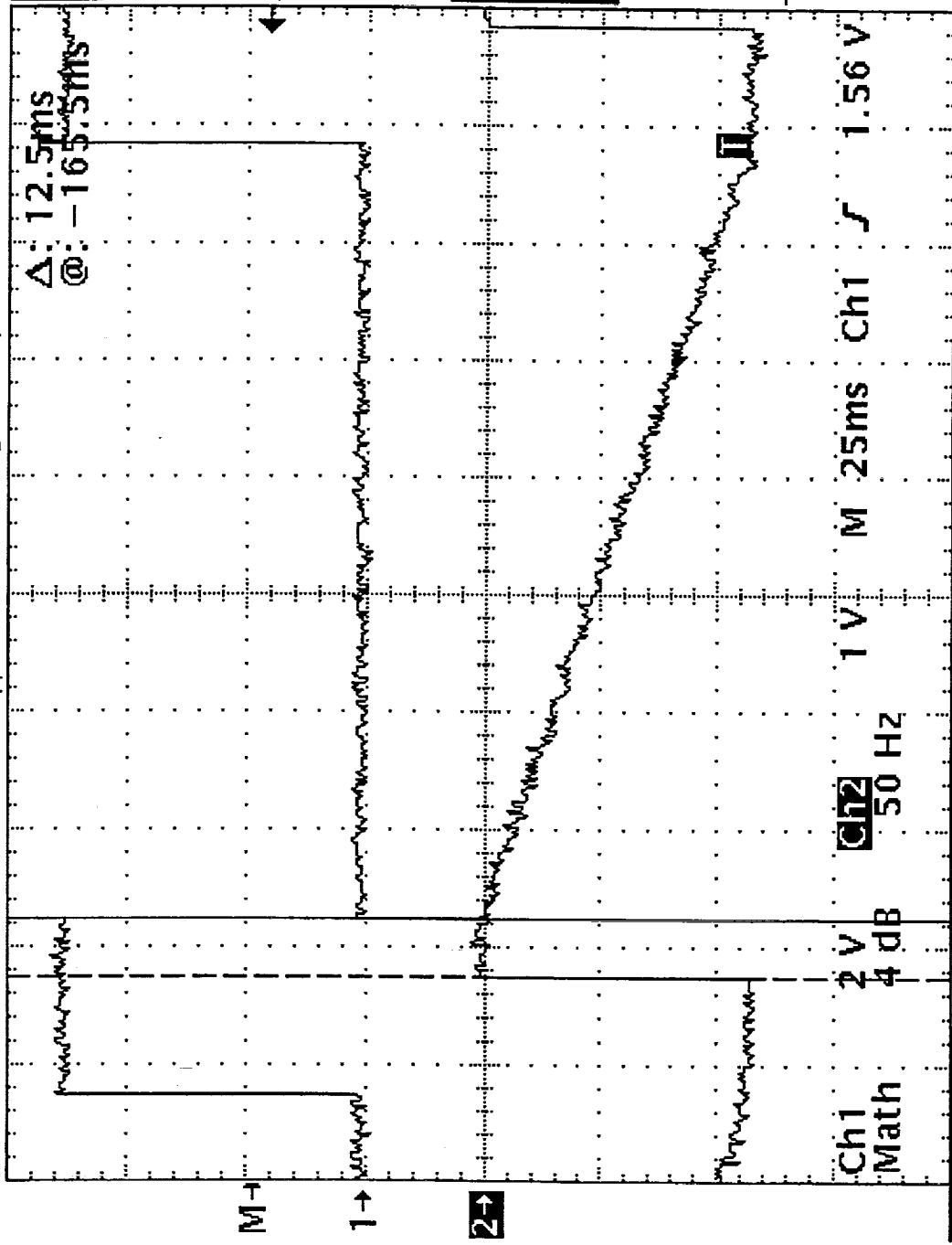
50 Hz

Time
Units
seconds

Function
V Bars

7D538
CH6

Tek Run: 2KS/s Sample Trig'd



Cursor Function	Off
	H Bars
	V Bars
	Paired

Function	Time	Units							
V Bars		seconds							

TEST DATA SHEET 39
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 07
Frequency: 54.94 GHz

INTEGRATION (X) *
Measured 165 ms
Required 165 ms \pm 10%
Pass/Fail P

HOLD (B-D) *
Measured 25 ms
Required 25 ms \pm 10%
Pass/Fail P

DUMP (D) *
Measured 12.5 ms
Required 9 ms to 15 ms
Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 08
Frequency: 55.5 GHz

INTEGRATION (X) *
Measured 165 ms
Required 165 ms \pm 10%
Pass/Fail P

HOLD (B-D) *
Measured 25 ms
Required 25 ms \pm 10%
Pass/Fail P

DUMP (D) *
Measured 12.5 ms
Required 9 ms to 15 ms
Pass/Fail P

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hail
Test Systems Engineer

3/16/99
Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date



3/16/99
Quality Control

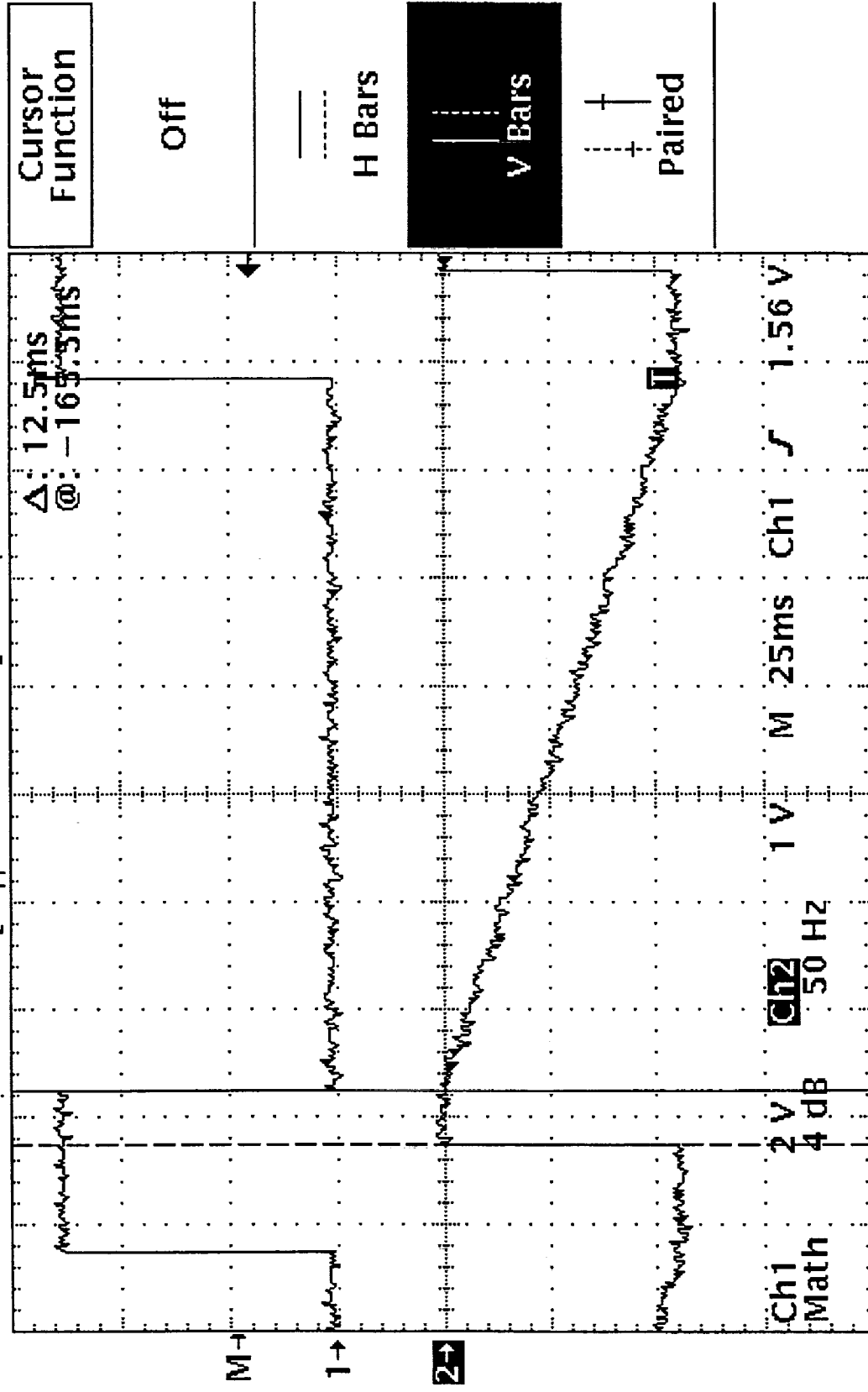
Date



CHN 7
TDS 39

Tek Stop: 2KS/s 15 Acqs

[T]



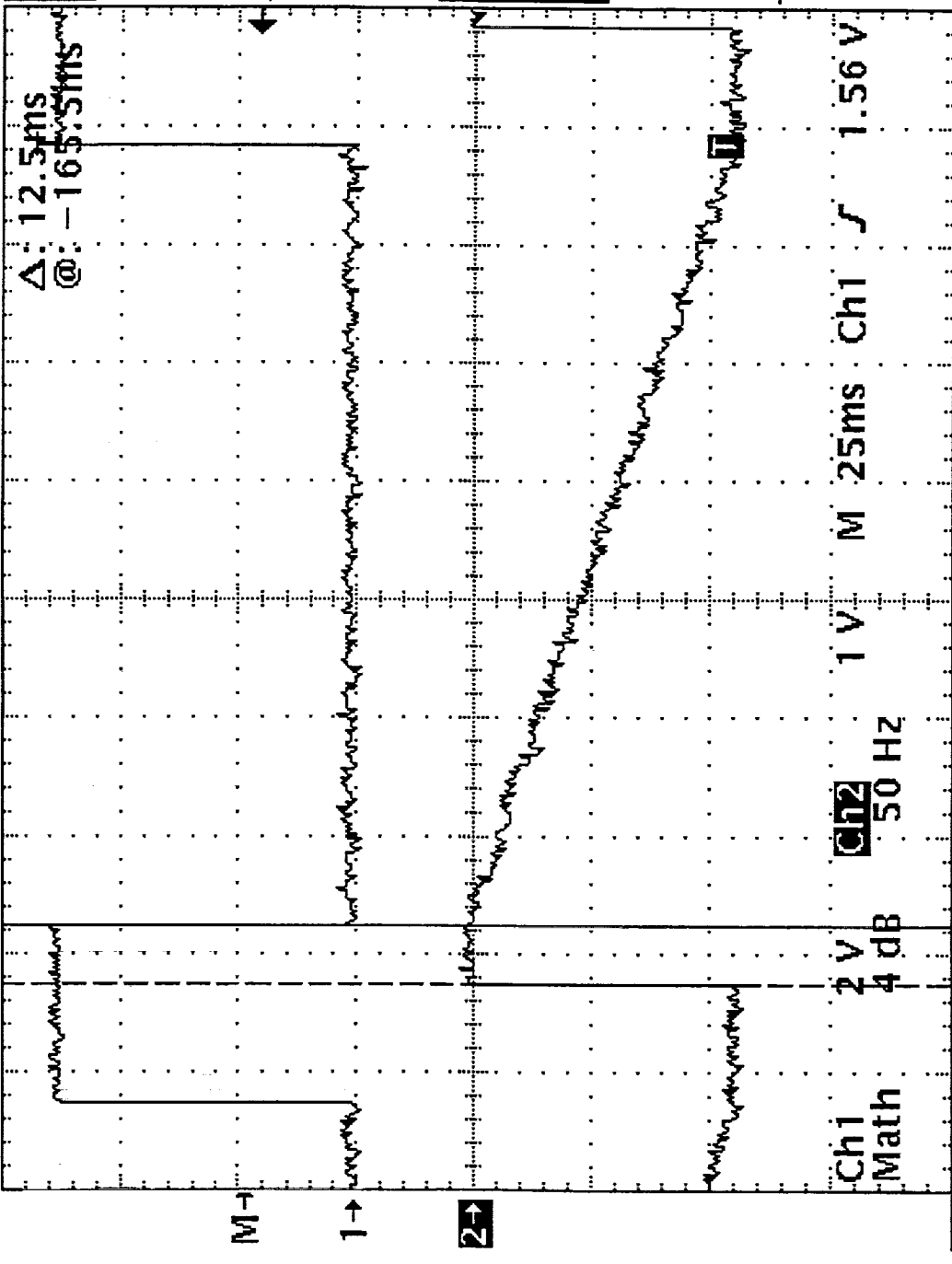
Function V Bars

Time Units Seconds

CH8

DS39

Tek Run: 2KS/s Sample Trig'd



Cursor Function

Off

H Bars

V Bars

Paired

Function V Bars

Time Units Seconds

10 Mar 99

TEST DATA SHEET 40

Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 09Frequency: 57.2903 GHz

INTEGRATION (X) *

Measured 165 msRequired 165 ms \pm 10%Pass/Fail P

HOLD (B-D) *

Measured 25 msRequired 25 ms \pm 10%Pass/Fail P

DUMP (D) *

Measured 12.5 ms

Required 9 ms to 15 ms

Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 10Frequency: 57.2903 GHz

INTEGRATION (X) *

Measured 165 msRequired 165 ms \pm 10%Pass/Fail P

HOLD (B-D) *

Measured 25 msRequired 25 ms \pm 10%Pass/Fail P

DUMP (D) *

Measured 12.5 ms

Required 9 ms to 15 ms

Pass/Fail P

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order:

373234

S/N:

105

Test Systems Engineer

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

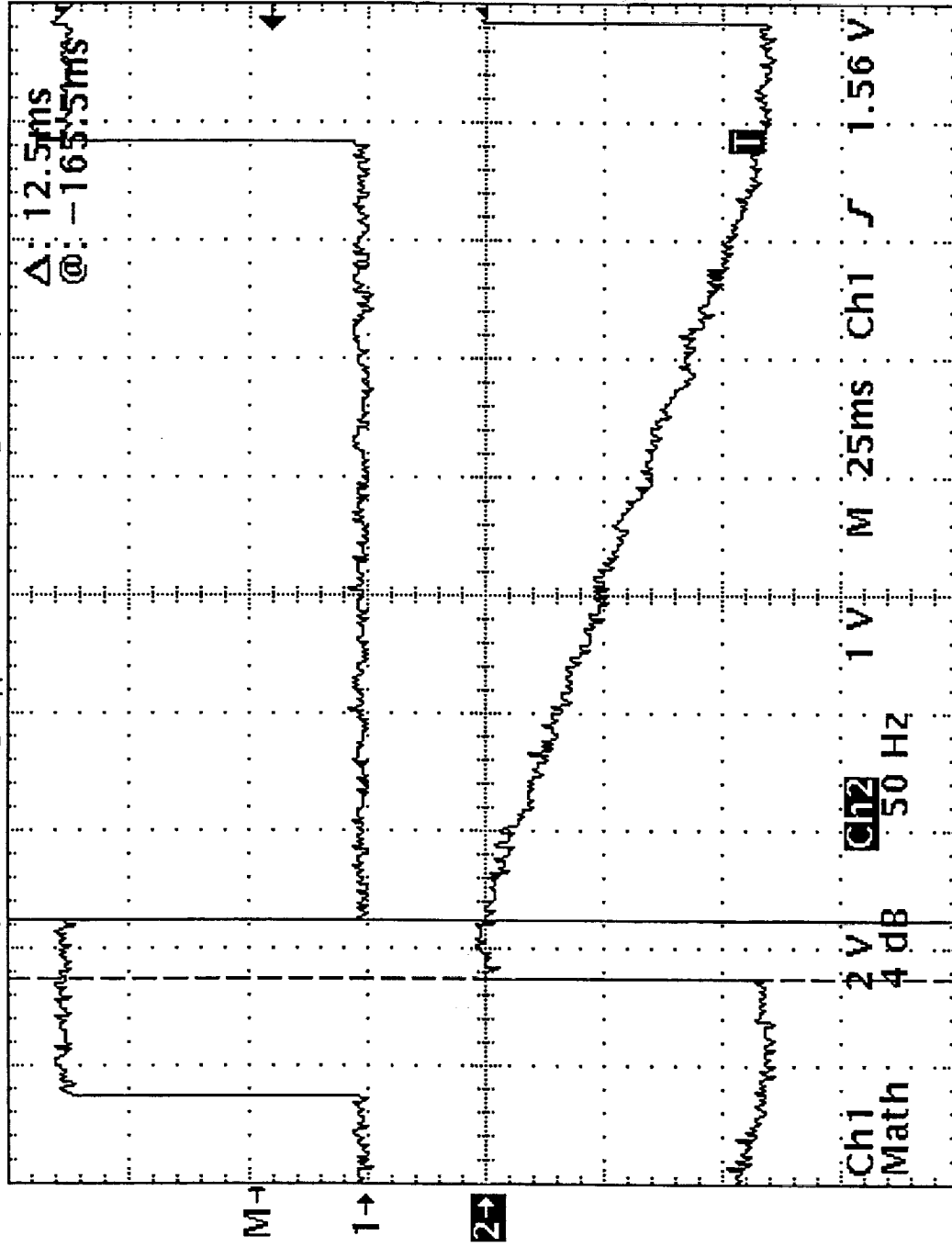


Tek Run: 2ks/s Sample **Pf119**

CH1 9

[T]

DS 40

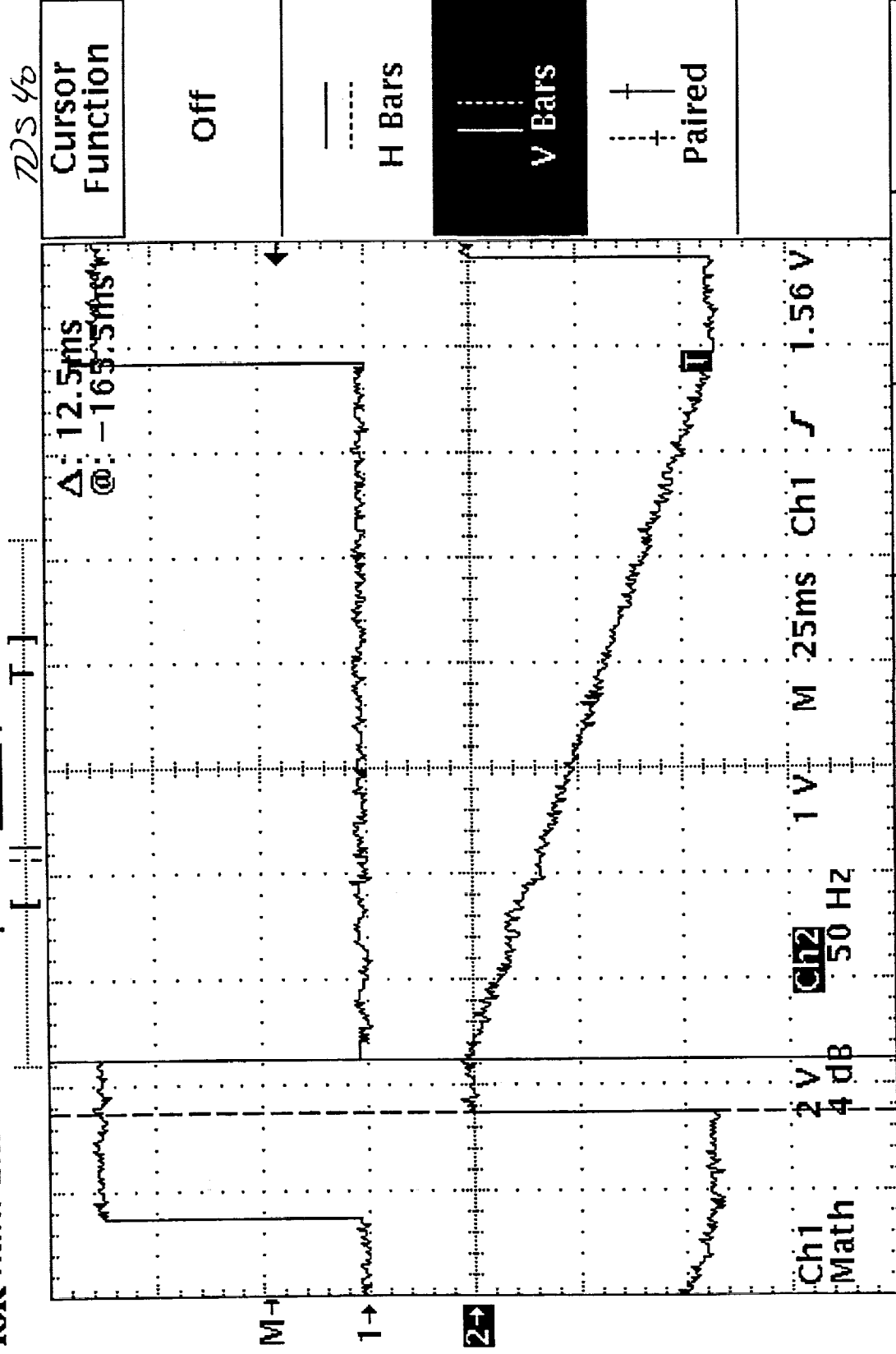


Function
V Bars

Time
Units
seconds

CH10
DS40

Tek Run: 2kS/s Sample **PFTTg**



Cursor Function
Off
H Bars
V Bars
paired

Function V Bars	Time Units Seconds				

TEST DATA SHEET 41
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 11
Frequency: 57.3903 GHz

INTEGRATION (X) *
Measured 165 ms
Required 165 ms \pm 10%
Pass/Fail P

HOLD (B-D) *
Measured 25 ms
Required 25 ms \pm 10%
Pass/Fail P

DUMP (D) *
Measured 12.5 ms
Required 9 ms to 15 ms
Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 12
Frequency: 57.3903 GHz

INTEGRATION (X) *
Measured 165 ms
Required 165 ms \pm 10%
Pass/Fail P

HOLD (B-D) *
Measured 25 ms
Required 25 ms \pm 10%
Pass/Fail P

DUMP (D) *
Measured 12.5 ms
Required 9 ms to 15 ms
Pass/Fail P

* Refer to Figure 2 for waveform configuration.

Circle Test: (CPT) LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105
R. Heil 3/16/99

Test Systems Engineer

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

Quality Control



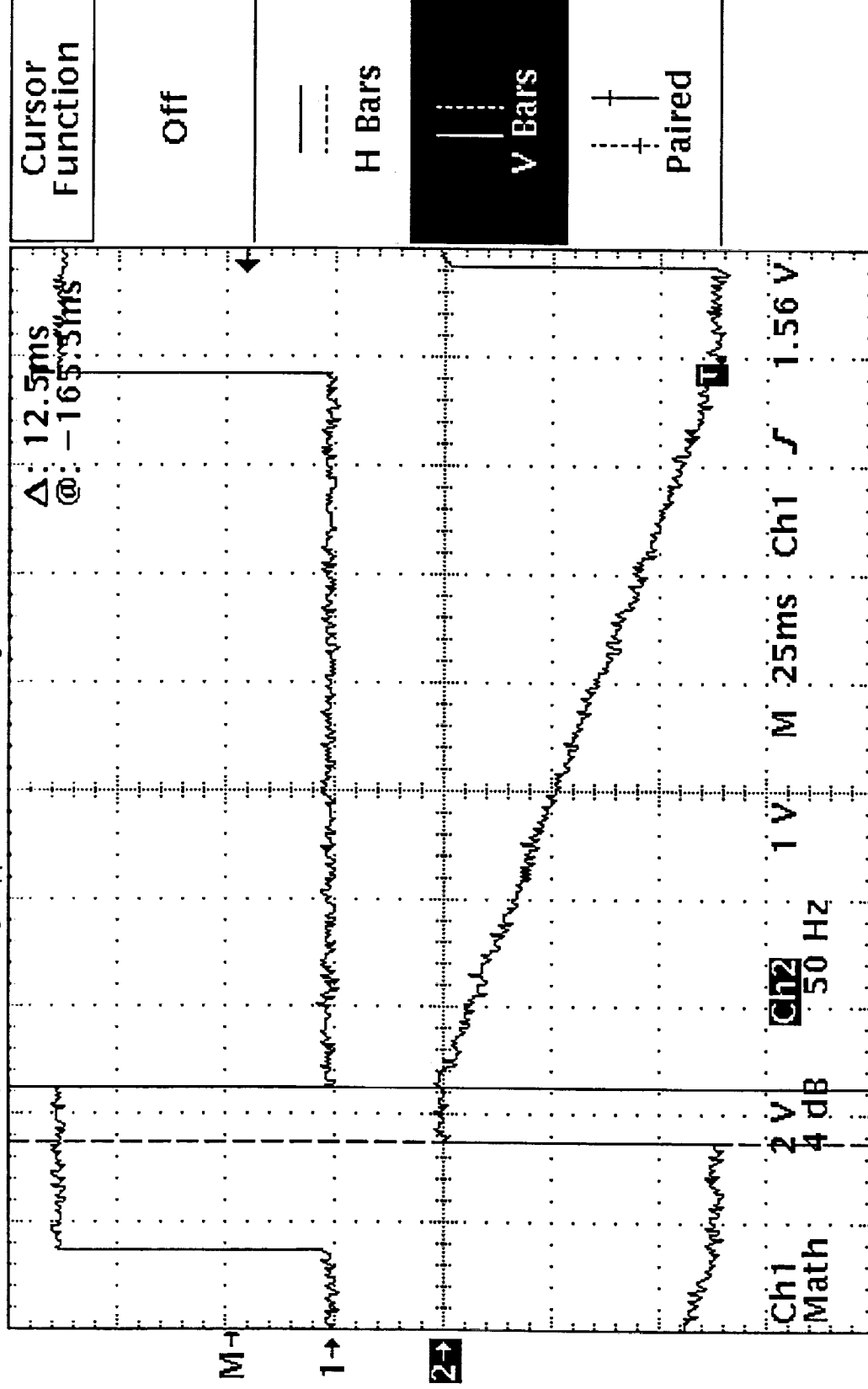
3/16/99

Date



Tek Run: 2KS/s Sample [179]d

CH1 11
RDS 41

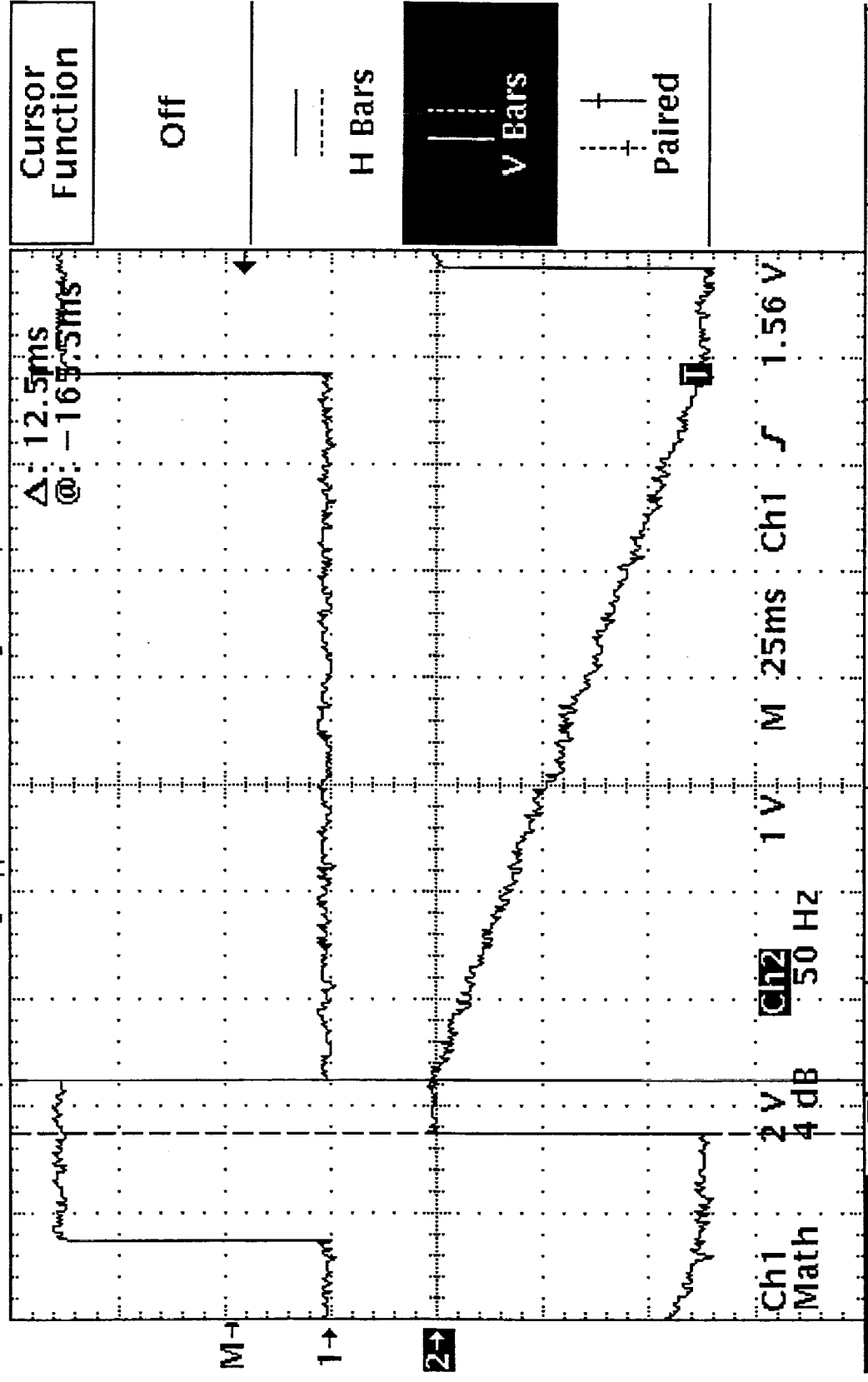
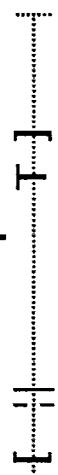


Function	Time	Units	seconds
V Bars			

CH1 12
TDS 41

Tek STOP 2KS/s

64 Acqs



Cursor
Function

Off

H Bars

V Bars

paired

Function
V Bars

Time
Units
seconds

TEST DATA SHEET 42
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 13Frequency: 57.3903 GHz

INTEGRATION (X) *

Measured 165 msRequired 165 ms \pm 10%Pass/Fail P

HOLD (B-D) *

Measured 25 msRequired 25 ms \pm 10%Pass/Fail P

DUMP (D) *

Measured 12.5 ms

Required 9 ms to 15 ms

Pass/Fail P

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 14Frequency: 57.3903 GHz

INTEGRATION (X) *

Measured 165 msRequired 165 ms \pm 10%Pass/Fail P

HOLD (B-D) *

Measured 25 msRequired 25 ms \pm 10%Pass/Fail P

DUMP (D) *

Measured 12.5 ms

Required 9 ms to 15 ms

Pass/Fail P

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234S/N: 105

MAR 17 1999

R. Hail
Test Systems Engineer

Date

 Customer Representative
(Flight Hardware Only)

Date

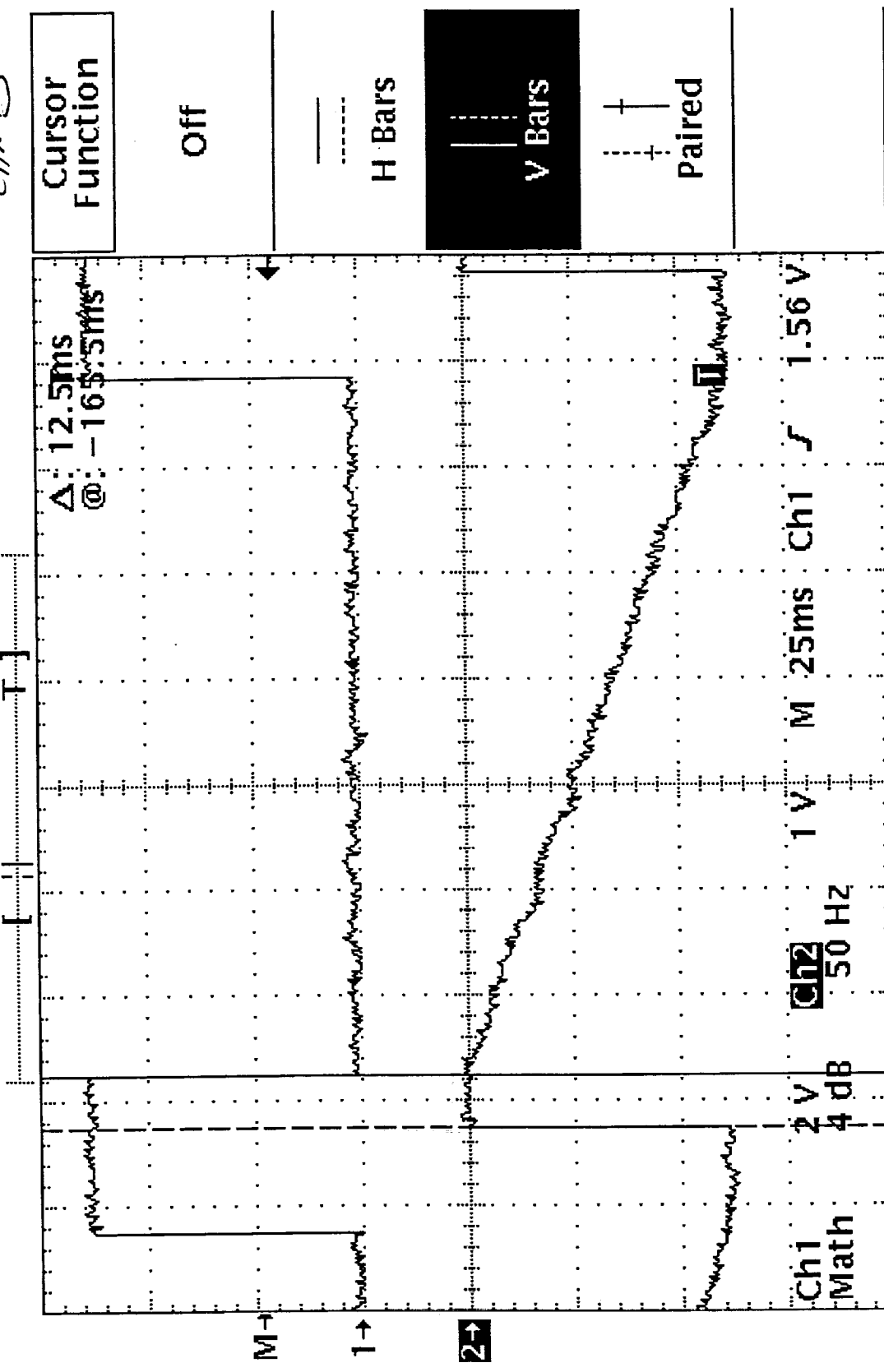
(Signature)
Quality Control

Date



TDS 42
CH 13

Tek Run: 2ks/s Sample Trig'd



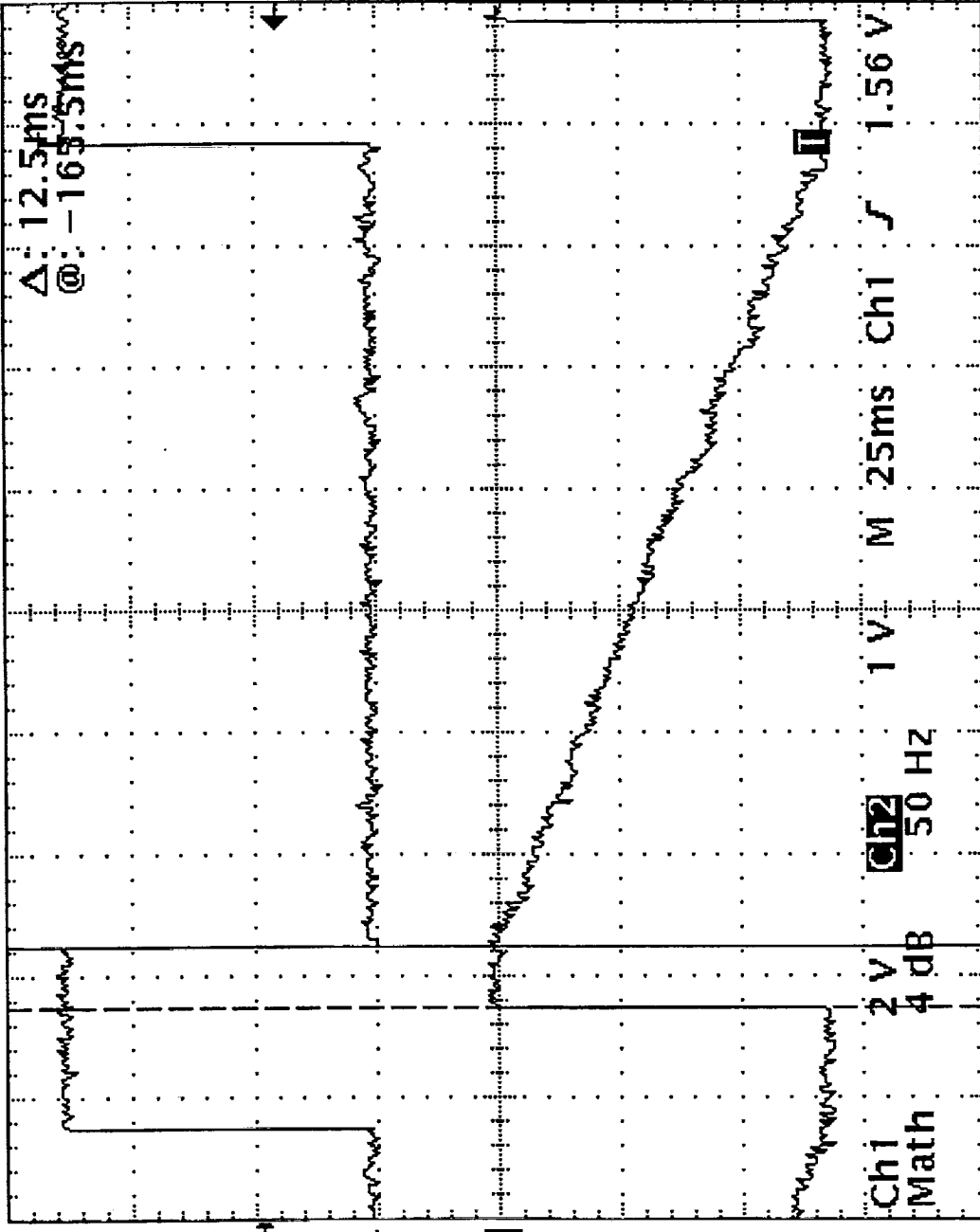
Cursor Function
Off
H Bars
V Bars
Paired

Function	V Bars	Time Units	Seconds
----------	--------	------------	---------

DDS42
CH1/4

Tek Stop 2ks/s

5 Acqs



Cursor
Function

Off

H Bars

V Bars

Paired

M→

1→

2→

Ch1 2 V

Math 4 dB

Ch2

50 Hz

1 V

M 25ms

Ch1

1.56 V

Function
V Bars

Time
Units
Seconds

TEST DATA SHEET 43
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 15
Frequency: 89 GHz

INTEGRATION (X) *
Measured 765 ms
Required 165 ms \pm 10%
Pass/Fail P

HOLD (B-D) *
Measured 25 ms
Required 25 ms \pm 10%
Pass/Fail P

DUMP (D) *
Measured 12.5 ms
Required 9 ms to 15 ms
Pass/Fail P

* Refer to Figure 2 for waveform configuration.

Circle Test: (CPT) LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hail 3/16/99
Test Systems Engineer Date

(Signature) MAR 17 1999
Customer Representative Date
(Flight Hardware Only)

(Signature) 3/16/99
Quality Control Date

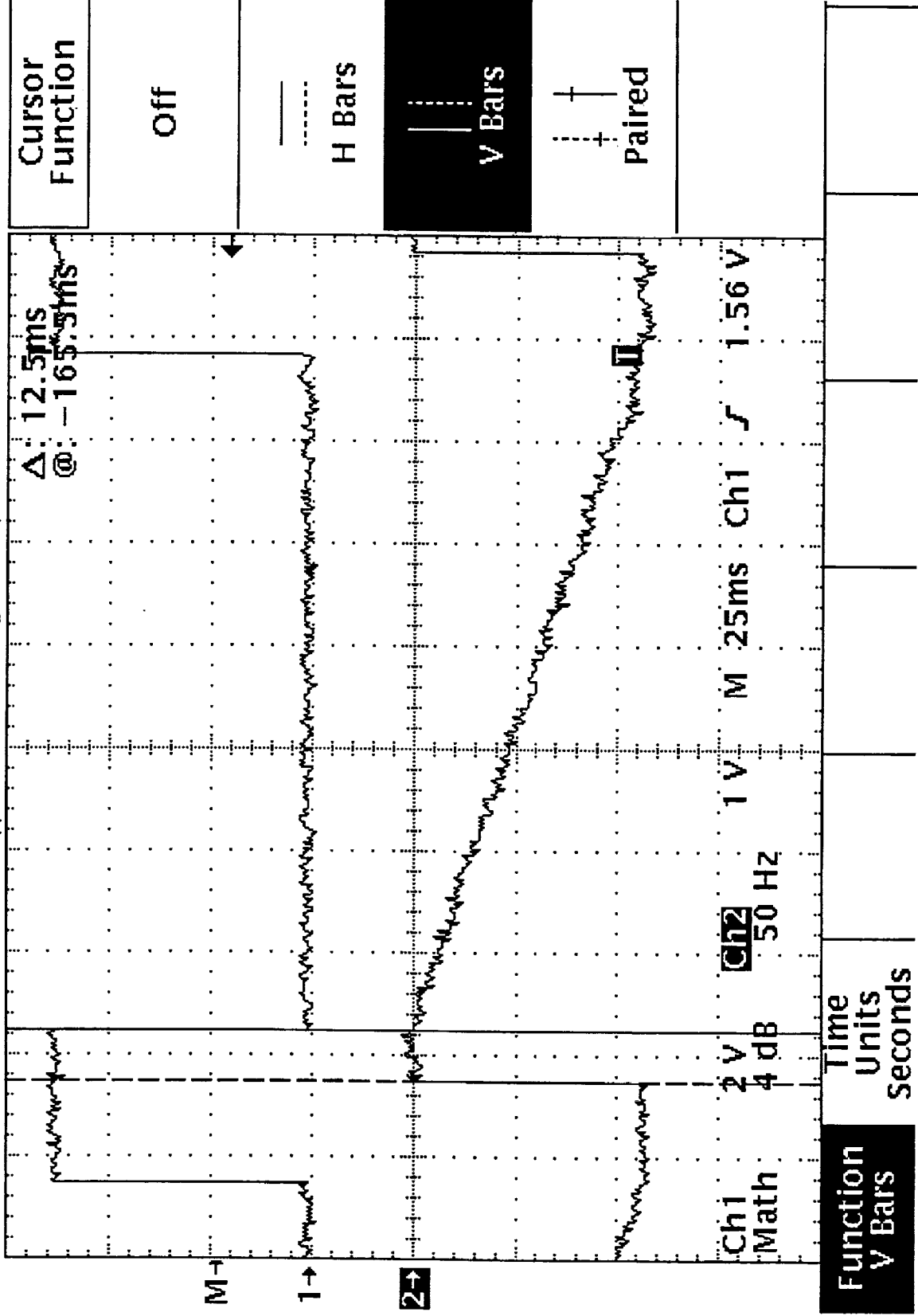


DDS 43
C/N 15

Tek Stop: 2ks/s

5 Acqs

[1] [T]





TEST DATA SHEET 44
PLLO No. 1 Verification (Paragraph 3.2.4.3.6.3)
PLLO No. 2 Verification (Paragraph 3.2.4.3.6.4)

PLLO No. 1 dc Level 4.38V 4.40V R.H. 3/16/99 PLLO NO. 1
Required: * Pass/Fail P

PLLO No. 2 dc Level 4.38V PLLO NO. 2
Required: * Pass/Fail P

* -15 to +15 V dc level for S/N 101 - S/N 104, 4.0 ± 1.0 V for S/N 105 and above.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105
R. Hail 3/16/99

Test Systems Engineer Date

Customer Representative
(Flight Hardware Only)

MAR 17 1999

Date

Quality Control

2/16/99

Date



AMSU A1-17 A1.EXE:62 FULL SCAN MODE P1 16-MAR-99 09:50:38 SCAN NUMBER 269
[5] DIGITAL A DATA ELEMENT 0000
[6] DIGITAL B DATA ELEMENT 00
[7] ANALOG DATA ELEMENT 00

ANALOG DATA 10 TO 27

10 ANTENNA DRIVE	15VDC	15.34	19 L.O.	VOLTAGE	CH 8	10.03
11 SIGNAL PROCESSING	-15VDC	-15.00	20 L.O.	VOLTAGE	CH 7	10.14
12 ANTENNA DRIVE	-15VDC	-14.75	21 L.O.	VOLTAGE	CH 6	10.05
13 RECEIVER AMPLIFIER	8VDC	8.09	22 L.O.	VOLTAGE	CH 3	10.04
14 SIGNAL PROCESSOR	5 VDC	5.07	23 L.O.	VOLTAGE	CH 4	10.00
15 ANTENNA DRIVE	5 VDC	5.21	24 L.O.	VOLTAGE	CH 5	10.16
16 RECEIVER MIXER/IF	10VDC	10.03	25 PLL0 # 2	LOCK DETECT		0.08
17 PHASE LOCK LOOP CH9/14	15VDC	14.99	26 PLL0 # 1	LOCK DETECT		4.38
18 PHASE LOCK LOOP CH9/14	-15VDC	-14.85	27 L.O.	VOLTAGE	CH15	14.91
[21] UP	[22] DOWN					

POWER [4] ON
SELECT TOUCHSCREEN BUTTON 2 SCREEN ONLY [2] PRINT [3] FULL [1] RETURN

TDS 44

[5] DIGITAL A DATA ELEMENT 0000

[6] DIGITAL B DATA ELEMENT 00

[7] ANALOG DATA ELEMENT 00

ANALOG DATA 10 TO 27

10 ANTENNA DRIVE	15VDC	15.25	19	L.O.	VOLTAGE	CH 8	10.05
11 SIGNAL PROCESSING	-15VDC	-15.00	20	L.O.	VOLTAGE	CH 7	10.14
12 ANTENNA DRIVE	-15VDC	-14.79	21	L.O.	VOLTAGE	CH 6	10.05
13 RECEIVER AMPLIFIER	8VDC	8.08	22	L.O.	VOLTAGE	CH 3	10.05
14 SIGNAL PROCESSOR	5 VDC	5.07	23	L.O.	VOLTAGE	CH 4	10.00
15 ANTENNA DRIVE	5 VDC	5.20	24	L.O.	VOLTAGE	CH 5	10.17
16 RECEIVER MIXER/IF	10VDC	10.03	25	PLLO # 2	LOCK DETECT		4.39
17 PHASE LOCK LOOP CH9/14	15VDC	14.99	26	PLLO # 1	LOCK DETECT		0.08
18 PHASE LOCK LOOP CH9/14	-15VDC	-14.85	27	L.O.	VOLTAGE	CH15	14.98
[21] UP	[22] DOWN						

[1] RETURN

[3] FULL

PRINT

[2]

SCREEN ONLY

POWER [4] ON

SCREEN ONLY

SELECT TOUCHSCREEN BUTTON 2

7DS 44

TEST DATA SHEET 49
Receiver Input Signals (Paragraph 3.2.4.4.1)

CH 9 through 14 PLLO	PRT Temp (°C)		Measured *	Requirements **	Pass/ Fail
PLLO No. 1	PLO No. 1	Xtal *** Osc.		57290.334 MHz ± 50 kHz	P
	26.90°C				
			57.290334 GHz		
PLLO No. 2	PLO No. 2	Xtal *** Osc.		57290.334 MHz ± 50 kHz	P
	27.92°C				
			57.290344 GHz		

- * Attach spectrum analyzer plots.
** = At 18°C
*** PRT not connected on S/N 105 and above.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105

R. Hail 3/16/99
Test Systems Engineer

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

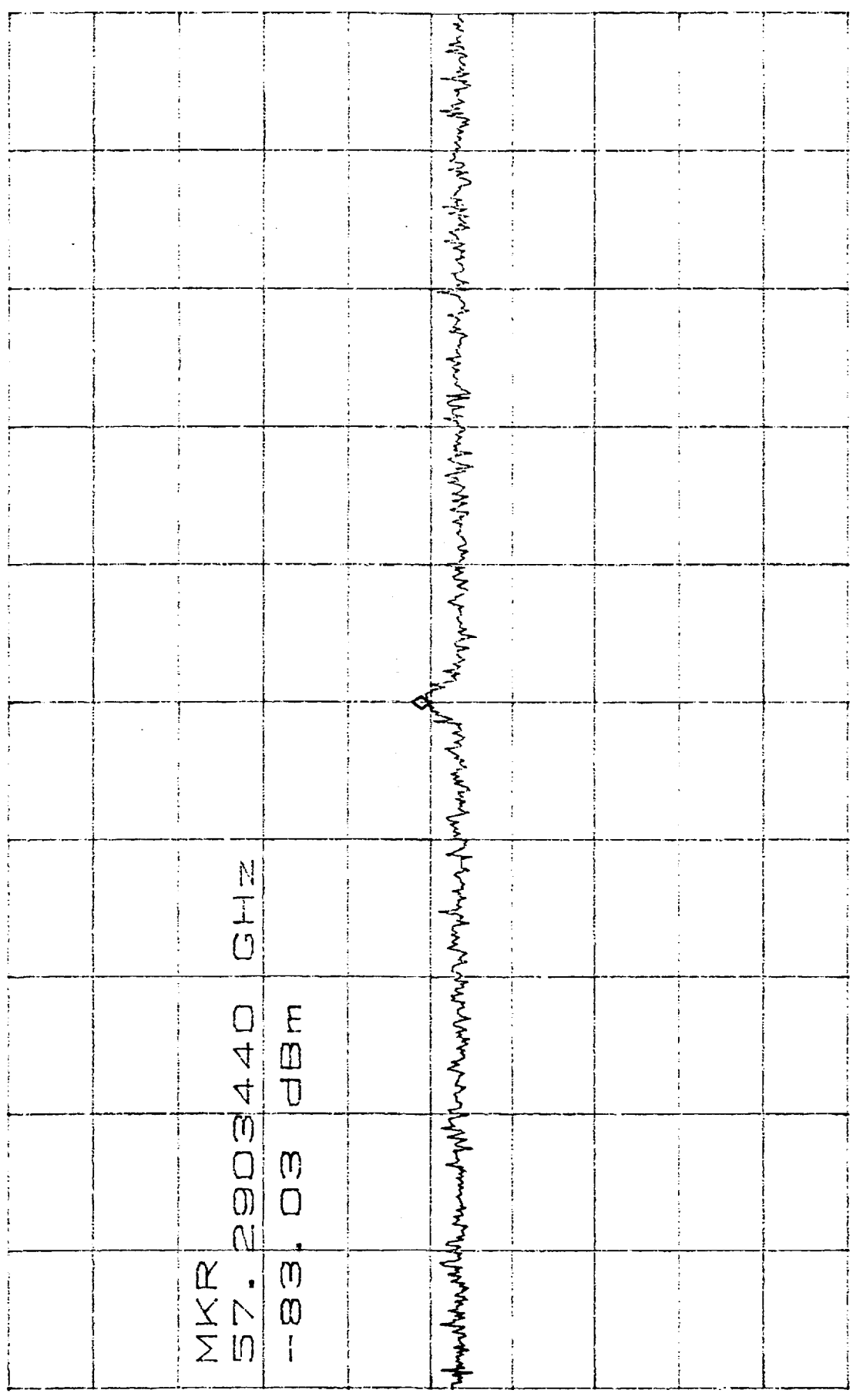
Quality Control

Date



(
RLO#1 TDS49

CL 30.0dB
RL -33.2dBm 10dB/ MKR -83.03dBm
57.2903440GHz



D

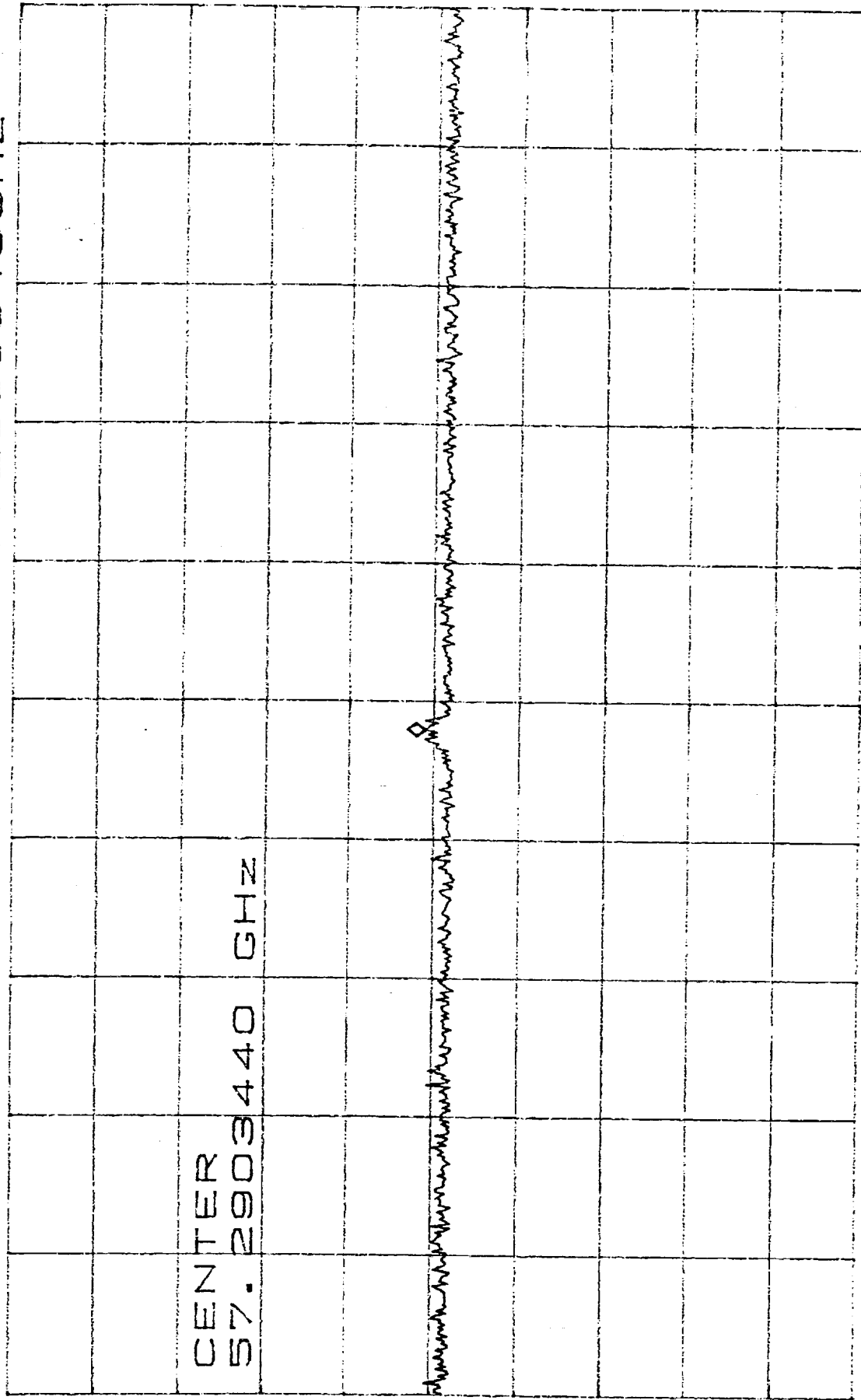
CENTER 57.2903440GHz SPAN 500.0KHz
*RBW 10KHz *VBW 10KHz
*SWP 1.00000

Plot#2
TD349
MKR -82.03dBm
57.2903340GHz

CL 30.0dB

RL -33.2dBm

10dB/



D

CENTER 57.2903440GHz
*RBW 10KHz *VBW 10KHz

SPAN 500.0KHz
*SWP 1.00000

TEST DATA SHEET 50 (Sheet 1 of 2)
Radiometer "Relative" NEAT Verification* (Paragraph 3.2.4.4.2.2)

Channels 3, 4, 5, 6, 7, 8, and 15. PLLO No. 1 (Channels 9 through 14)

Channel Number>	3	4	5	6
NEAT (Average of 5 data)	<u>.231</u>	<u>.142</u>	<u>.154</u>	<u>.157</u>
Pass/Fail	<u>P</u>	<u>P</u>	<u>P</u>	<u>P</u>
NEAT (Specified) K **	0.40	0.25	0.25	0.25
Channel Number>	7	8	9	10
NEAT (Average of 5 data)	<u>.171</u>	<u>.172</u>	<u>.179</u>	<u>.213</u>
Pass/Fail	<u>P</u>	<u>P</u>	<u>P</u>	<u>P</u>
NEAT (Specified) K **	0.25	0.25	0.25	0.40
Channel Number>	11	12	13	14
NEAT (Average of 5 data)	<u>.235</u>	<u>.341</u>	<u>.450</u>	<u>.767</u>
Pass/Fail	<u>P</u>	<u>P</u>	<u>P</u>	<u>P</u>
NEAT (Specified) K **	0.40	0.60	0.80	1.20
Channel Number>	15			
NEAT (Average of 5 data)	<u>.176</u>			
Pass/Fail	<u>P</u>			
NEAT (Specified) K **	0.50			

- * Baseline data for acceptance tests. Use first CPT or first LPT data along with specification value for pass/fail criteria
** For reference only

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105
R. Hail 3/16/99

Test Systems Engineer

Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date



3/14/99



A1 FUNCTIONAL TEST RESULTS
16-MAR-99

10:34:25

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	296.16	16193.0	13411.0	0.078	0.234
4	296.16	16636.0	13713.0	0.074	0.150
5	296.16	17016.0	14189.0	0.076	0.143
6	294.69	16794.0	14010.0	0.077	0.161
7	294.69	16345.0	13604.0	0.078	0.172
8	296.16	16343.0	13588.0	0.078	0.177
9	294.69	17469.0	14439.0	0.071	0.188
10	294.69	16843.0	13763.0	0.070	0.241
11	294.69	18659.0	15139.0	0.061	0.248
12	294.69	18560.0	15070.0	0.062	0.355
13	294.69	17987.0	14699.0	0.065	0.445
14	294.69	19919.0	16174.0	0.057	0.775
15	294.69	16769.0	15110.0	0.129	0.206

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

RETURN [1]

TDS 50

10FZ

PLO#1

[5] PRINT DISTRIBUTION GRAPH
SELECT TOUCHSCREEN BUTTON 2

A1 FUNCTIONAL TEST RESULTS 16-MAR-99 1.EXE;62

10:35:37

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	296.15	16189.0	13401.0	0.078	0.221
4	296.15	16631.0	13701.0	0.074	0.145
5	296.15	17012.0	14180.0	0.076	0.146
6	294.68	16789.0	14012.0	0.077	0.152
7	294.68	16338.0	13604.0	0.079	0.204
8	296.15	16338.0	13577.0	0.078	0.164
9	294.68	17460.0	14437.0	0.071	0.189
10	294.68	16836.0	13764.0	0.070	0.204
11	294.68	18654.0	15143.0	0.061	0.231
12	294.68	18553.0	15072.0	0.062	0.347
13	294.68	17981.0	14700.0	0.065	0.430
14	294.68	19917.0	16173.0	0.057	0.736
15	294.68	16762.0	15109.0	0.130	0.178

[4] PRINT HISTOGRAM

[2] PRINT SCREEN [3] PRINT RAW DATA

RETURN [1]

[5] PRINT DISTRIBUTION GRAPH
SELECT TOUCHSCREEN BUTTON 2

A1 FUNCTIONAL TEST RESULTS
16-MAR-99

10:36:41

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	296.13	16184.0	13406.0	0.078	0.238
4	296.13	16626.0	13706.0	0.074	0.132
5	296.13	17008.0	14185.0	0.077	0.156
6	294.67	16786.0	14021.0	0.078	0.135
7	294.67	16333.0	13613.0	0.079	0.176
8	296.13	16333.0	13582.0	0.079	0.174
9	294.67	17452.0	14443.0	0.071	0.158
10	294.67	16829.0	13771.0	0.070	0.200
11	294.67	18648.0	15152.0	0.061	0.238
12	294.67	18545.0	15080.0	0.062	0.348
13	294.67	17975.0	14708.0	0.066	0.455
14	294.67	19911.0	16187.0	0.058	0.694
15	294.67	16757.0	15116.0	0.131	0.169

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH
SELECT TOUCHSCREEN BUTTON 2
RETURN [1]

A1 FUNCTIONAL TEST RESULTS
 A1.EXE;62 16-MAR-99

10:37:45

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	296.12	16180.0	13426.0	0.078	0.209
4	296.12	16621.0	13730.0	0.075	0.135
5	296.12	17004.0	14206.0	0.077	0.155
6	294.66	16783.0	14021.0	0.078	0.167
7	294.66	16329.0	13613.0	0.079	0.140
8	296.12	16329.0	13607.0	0.079	0.178
9	294.66	17444.0	14440.0	0.071	0.187
10	294.66	16823.0	13770.0	0.070	0.216
11	294.66	18642.0	15151.0	0.061	0.230
12	294.66	18539.0	15079.0	0.062	0.339
13	294.66	17968.0	14707.0	0.066	0.474
14	294.66	19905.0	16185.0	0.058	0.883
15	294.66	16753.0	15114.0	0.131	0.148

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

RETURN [1]

[5] PRINT DISTRIBUTION GRAPH
 SELECT TOUCHSCREEN BUTTON 2

A1 FUNCTIONAL TEST RESULTS 16-MAR-99

10:38:49

A1.EXE;62

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	296.11	16176.0	13422.0	0.078	0.255
4	296.11	16616.0	13726.0	0.075	0.150
5	296.11	17000.0	14203.0	0.077	0.174
6	294.65	16780.0	14024.0	0.078	0.173
7	294.65	16324.0	13614.0	0.079	0.167
8	296.11	16324.0	13604.0	0.079	0.169
9	294.65	17438.0	14441.0	0.072	0.174
10	294.65	16817.0	13772.0	0.070	0.207
11	294.65	18635.0	15152.0	0.062	0.252
12	294.65	18530.0	15080.0	0.062	0.317
13	294.65	17962.0	14708.0	0.066	0.448
14	294.65	19899.0	16188.0	0.058	0.745
15	294.65	16748.0	15114.0	0.131	0.182

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

RETURN [1]

[5] PRINT DISTRIBUTION GRAPH
SELECT TOUCHSCREEN BUTTON 2



TEST DATA SHEET 50 (Sheet 2 of 2)
Radiometer "Relative" NEAT Verification* (Paragraph 3.2.4.4.2.2)

PLLO No. 2 (Channels 9 through 14)

Channel Number>	9	10	11	12
NEAT (Average of 5 data)	<u>.171</u>	<u>.221</u>	<u>.229</u>	<u>.340</u>
Pass/Fail	<u>P</u>	<u>P</u>	<u>P</u>	<u>P</u>
NEAT (Specified) K **	0.25	0.40	0.40	0.60
Channel Number>	13	14		
NEAT (Average of 5 data)	<u>.469</u>	<u>.778</u>		
Pass/Fail	<u>P</u>	<u>P</u>		
NEAT (Specified) K **	0.80	1.20		

- * Baseline data for acceptance tests. Use first CPT or first LPT data along with specification value for pass/fail criteria
** For reference only

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 373234 S/N: 105
R. Hais 3/16/99

Test Systems Engineer Date



MAR 17 1999

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date



.



A1 FUNCTIONAL TEST RESULTS
16-MAR-99

10:52:01

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	295.96	16143.0	13508.0	0.082	0.257
4	295.96	16574.0	13825.0	0.079	0.152
5	295.96	16966.0	14296.0	0.081	0.174
6	294.53	16752.0	14056.0	0.080	0.166
7	294.53	16265.0	13631.0	0.081	0.184
8	295.96	16286.0	13707.0	0.084	0.190
9	294.53	16864.0	14018.0	0.075	0.169
10	294.53	16379.0	13477.0	0.074	0.247
11	294.53	18210.0	14877.0	0.064	0.241
12	294.53	18119.0	14813.0	0.065	0.343
13	294.53	17572.0	14457.0	0.069	0.459
14	294.53	19456.0	15905.0	0.060	0.792
15	294.53	16711.0	15134.0	0.136	0.204

Plot#2

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH
SELECT TOUCHSCREEN BUTTON 2

RETURN [1]

TDS 50

SHEET 2 of 2

Plot#2

A1 FUNCTIONAL TEST RESULTS

16-MAR-99

10:53:05

A1.EXE;62

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	295.95	16141.0	13513.0	0.082	0.227
4	295.95	16571.0	13833.0	0.079	0.164
5	295.95	16964.0	14303.0	0.081	0.155
6	294.52	16750.0	14060.0	0.080	0.137
7	294.52	16264.0	13636.0	0.082	0.161
8	295.95	16283.0	13713.0	0.084	0.178
9	294.52	16859.0	14024.0	0.076	0.160
10	294.52	16376.0	13482.0	0.074	0.224
11	294.52	18204.0	14881.0	0.065	0.213
12	294.52	18113.0	14818.0	0.065	0.318
13	294.52	17567.0	14460.0	0.069	0.447
14	294.52	19453.0	15908.0	0.061	0.756
15	294.52	16709.0	15137.0	0.136	0.185

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH
 SELECT TOUCHSCREEN BUTTON 2
 RETURN [1]

A1 FUNCTIONAL TEST RESULTS
16-MAR-99

10:54:09

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	295.94	16139.0	13532.0	0.083	0.247
4	295.94	16569.0	13856.0	0.080	0.165
5	295.94	16962.0	14324.0	0.082	0.193
6	294.52	16749.0	14063.0	0.080	0.137
7	294.52	16264.0	13641.0	0.082	0.145
8	295.94	16281.0	13737.0	0.085	0.185
9	294.52	16856.0	14027.0	0.076	0.172
10	294.52	16374.0	13485.0	0.074	0.219
11	294.52	18200.0	14884.0	0.065	0.234
12	294.52	18107.0	14820.0	0.065	0.321
13	294.52	17562.0	14463.0	0.069	0.504
14	294.52	19444.0	15906.0	0.061	0.789
15	294.52	16707.0	15139.0	0.137	0.186

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH
SELECT TOUCHSCREEN BUTTON 2 RETURN [1]

A1 FUNCTIONAL TEST RESULTS

A1.EXE;62 16-MAR-99

10:55:13

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	295.94	16135.0	13541.0	0.083	0.257
4	295.94	16566.0	13867.0	0.080	0.157
5	295.94	16960.0	14334.0	0.082	0.154
6	294.51	16748.0	14067.0	0.080	0.166
7	294.51	16263.0	13647.0	0.082	0.153
8	295.94	16278.0	13748.0	0.085	0.187
9	294.51	16853.0	14030.0	0.076	0.166
10	294.51	16370.0	13487.0	0.074	0.211
11	294.51	18192.0	14885.0	0.065	0.249
12	294.51	18102.0	14822.0	0.065	0.350
13	294.51	17555.0	14466.0	0.069	0.470
14	294.51	19436.0	15908.0	0.061	0.737
15	294.51	16705.0	15143.0	0.137	0.152

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

[5] PRINT DISTRIBUTION GRAPH RETURN [1]

SELECT TOUCHSCREEN BUTTON 2

A1 FUNCTIONAL TEST RESULTS
16-MAR-99

10:56:17

CH	WARM TEMP	WARM COUNTS	COLD COUNTS	GAIN	DELTA T
3	295.93	16134.0	13538.0	0.083	0.255
4	295.93	16563.0	13863.0	0.080	0.164
5	295.93	16958.0	14331.0	0.082	0.176
6	294.50	16746.0	14073.0	0.080	0.149
7	294.50	16262.0	13655.0	0.082	0.182
8	295.93	16276.0	13746.0	0.085	0.216
9	294.50	16851.0	14035.0	0.076	0.188
10	294.50	16367.0	13493.0	0.075	0.208
11	294.50	18187.0	14891.0	0.065	0.209
12	294.50	18095.0	14826.0	0.066	0.369
13	294.50	17551.0	14467.0	0.070	0.468
14	294.50	19431.0	15914.0	0.061	0.819
15	294.50	16703.0	15148.0	0.138	0.197

[2] PRINT SCREEN [3] PRINT RAW DATA [4] PRINT HISTOGRAM

RETURN [1]

[5] PRINT DISTRIBUTION GRAPH
SELECT TOUCHSCREEN BUTTON 2



SPECIAL TEST DATA

TEST DATA SHEET 52 (Sheet 2 of 2)
Instrument Feedback Tests (Paragraph 3.2.4.2.1.3, 3.2.4.2.2.8, 3.2.4.2.3.2, 3.2.4.2.4.2)

3.2.4.2.2.8: +28V Pulse Load Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured Ripple (Peak-to-Peak) In mA	Pass/Fail
3.2.4.2.2.8.1	8	Load current ripple	<43 mA	Value: _____	

N/A
3-17-99

3.2.4.2.3.2: +28V Analog Telemetry Bus Instr. Feedback Tests

Subpara	Step	Test Type	Required	Measured Ripple (Peak-to-Peak) In mA	Pass/Fail
3.2.4.2.3.2.1	7	Load current ripple	<0.29 mA	Value: <u>0.10 mA</u>	P

3.2.4.2.4.2: +10V Interface Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured Ripple (Peak-to-Peak) In mA	Pass/Fail
3.2.4.2.4.2.1	7	Load current ripple	<1.0 mA	Value: <u>0.85 mA</u>	P

*OPERATION 0850 - C
- D*

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: 3732.34 S/N: 105



3-17-99

Test Systems Engineer

Date



Customer Representative
(Flight Hardware Only)

3-17-99

Date

Duke Waller



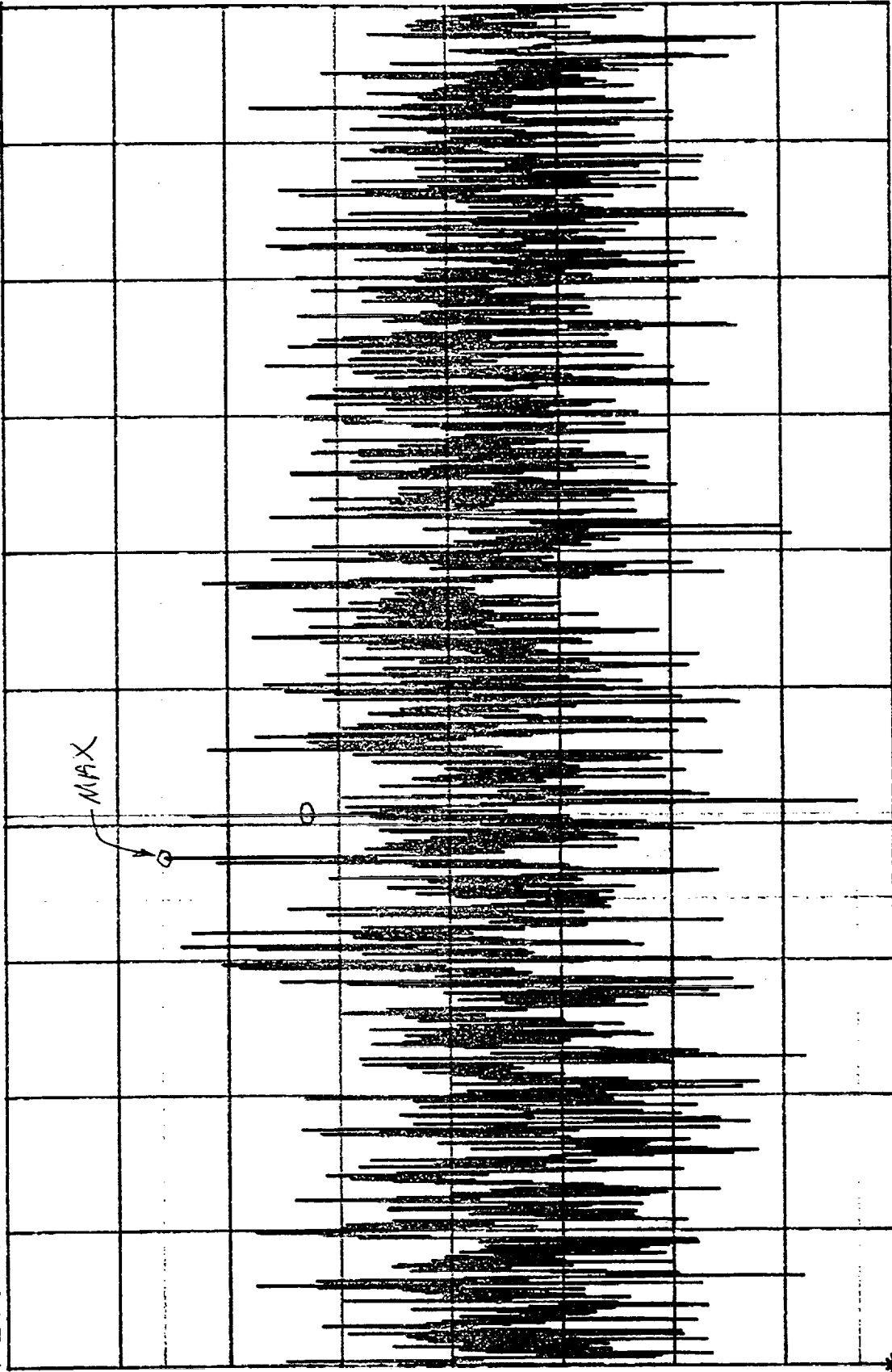
Quality Control

3-17-99

Date

X=3.008 S ΔX=503.9ms Y=-911.71μ ΔY=502.7μV
 Yd=-912.96μ ΔYd=177.6μV

CAP TIM BUF



AC-coupled

Real

2 max/10mV

0.0f-

V

-1.44 mV

0.0

324.23.21

Sec

8.0

S/N: 3732.34

+28V ATB 8 Sec Scan

Test END

AMSD
B
SET

Date: 3-17-99

S/N: 1331720-2

SN: 105

TDS-52

Quality:

29%
172

Callio Wallace

3-17-99

OPERATIONAL 10570-17

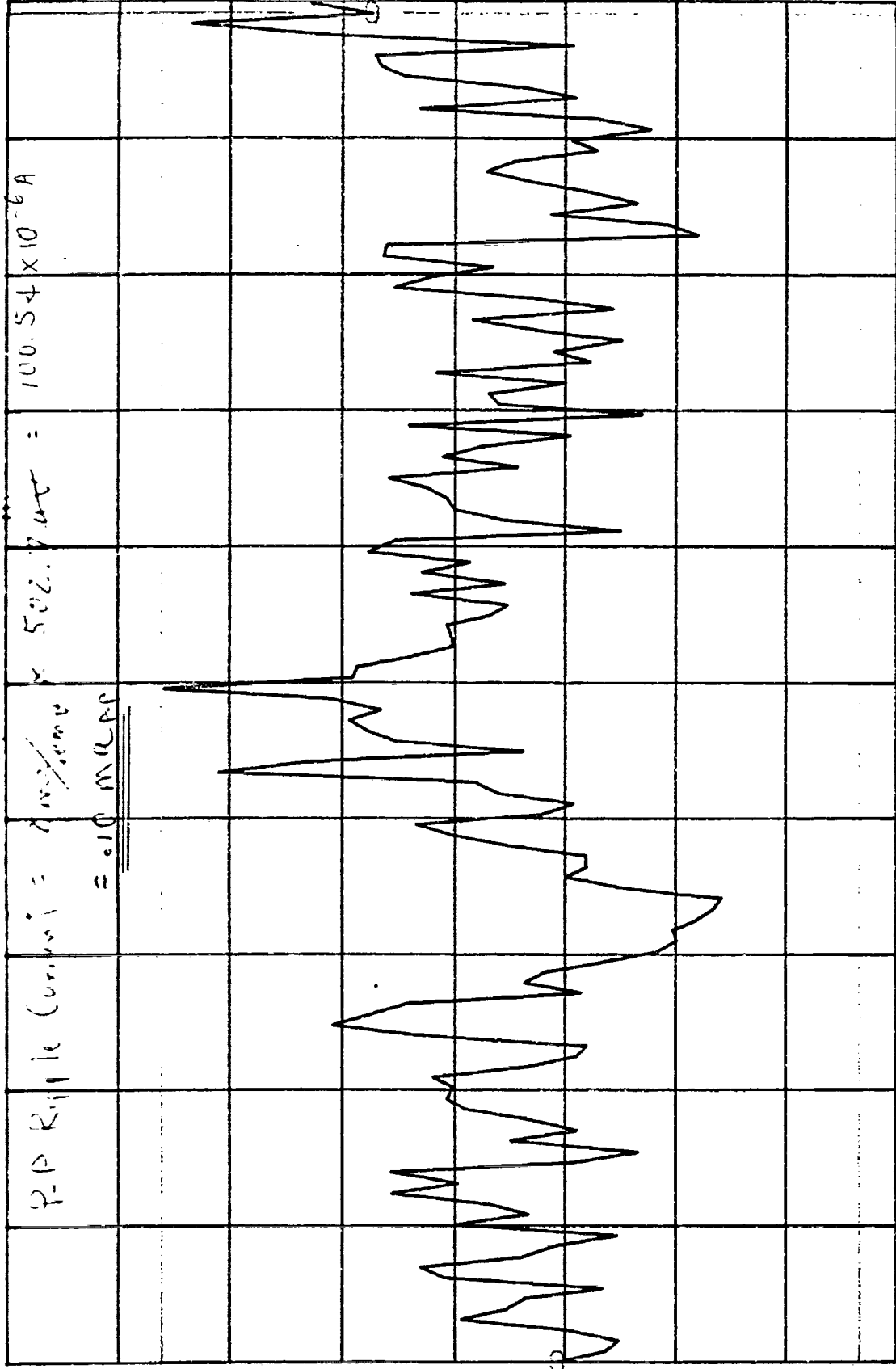
X=3.008 S ΔX=500.0mS Y=-911.71μ ΔY=502.7μV
 Y0=-912.96μ ΔY0=134.3μV

CAP TIM BUF

-800 μ

80.0 μ

/Div



Real
 AC coupled

V 0.0 A-0

2mA/10mV

-1.44 m

Fxd X

SN: 373234

SN: 1331720-2

32.4, 23.2.1
 +28V ATB Ripple Current

TDS-52

Sec

Test Eng:

Quality:

3.26

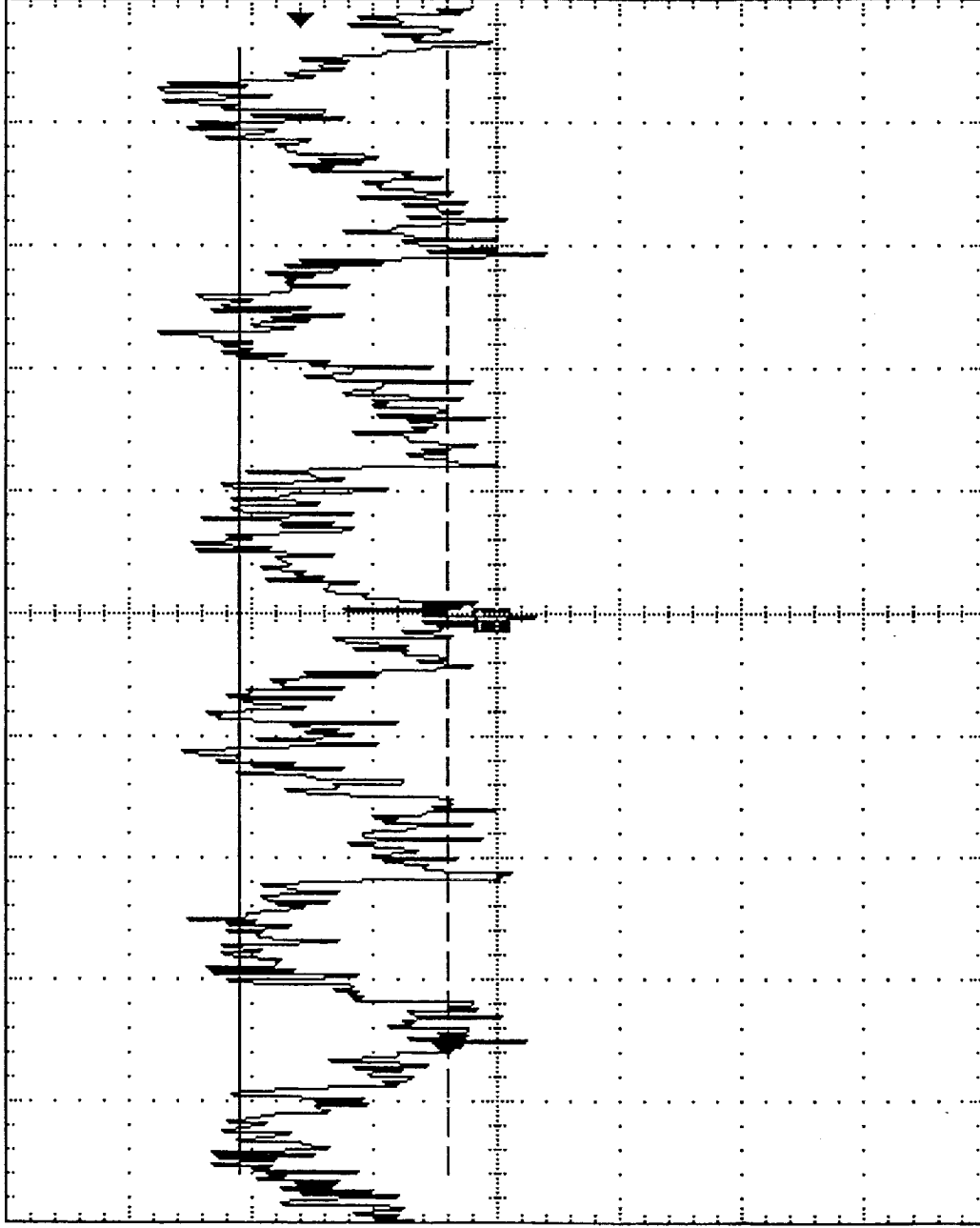
Date: 3-17-99

Tiller W. 3-17-99

Tek Stop 1ks/s

11 Acqs

[T]



Δ : 8.5mV
@: 5.6mV

17 Mar 1999
15:13:40

S/O: 373234

P/N: 1331720-2

OPERATION 0850-C

Test Eng.

TD5-52

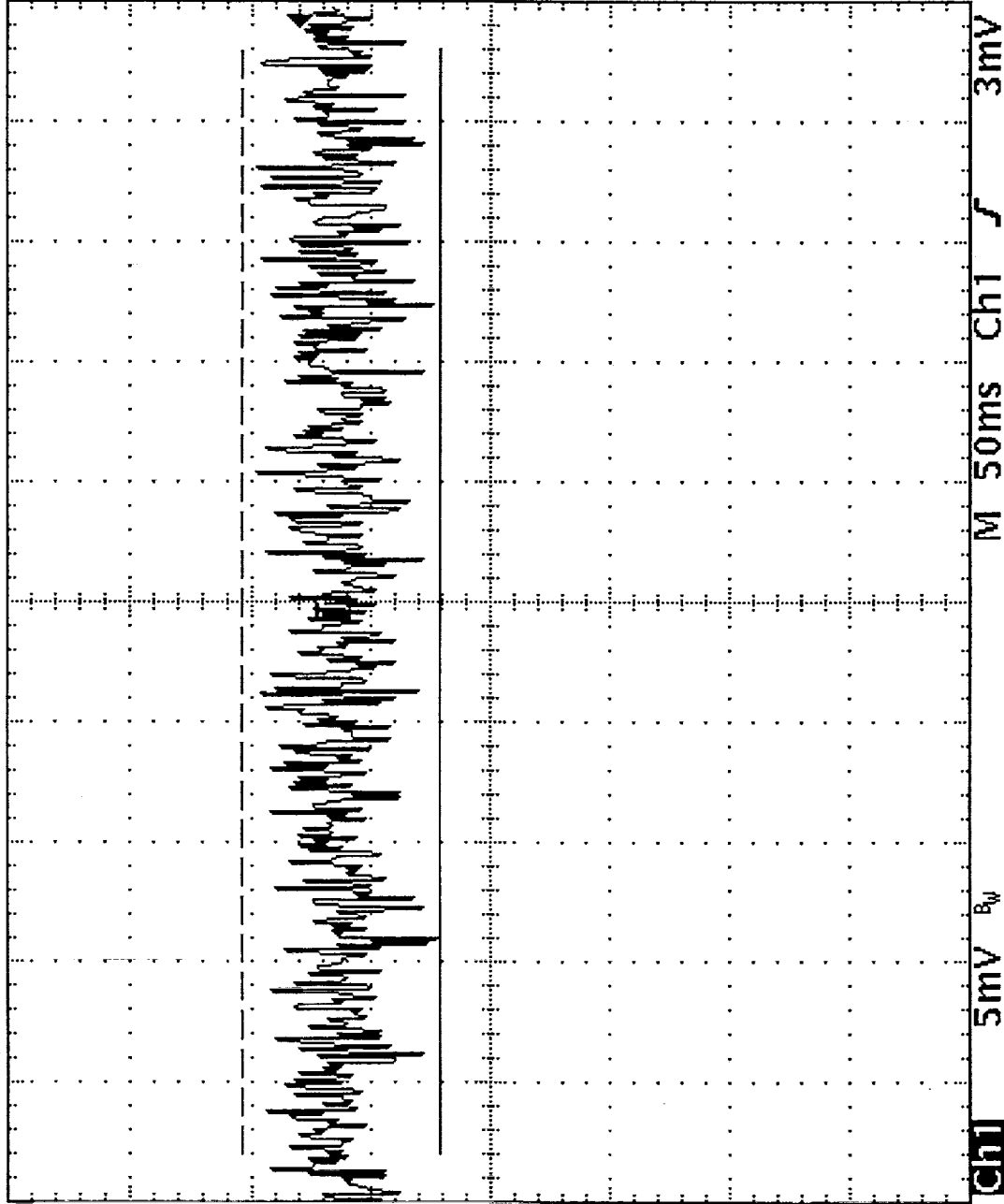
Date: 3-17-99

Quality: ²⁴ Tullie Wallace 3-17-99

Tek Stop: 1KS/s

63 Acqs

Δ : 8.3mV
@: -2.8mV



1mA / 10mV

1→

0.0A

17 Mar 1999
15:11:01

Test Eng: AMSU B SET Date: 3-17-99

Quality: TA ES2 Tullio Wallace 3-17-99

Probe Base line

SO: 573234

PN: 1331720-2 SN: 105

TDS-52

—

—

—

Electronic Systems Plant

P.O. Box 296

Azusa, California 91702-0296

CAGE/Facility Ident: 70143

GENCORP
AEROJET

AE-26156/3B
10 March 1999

Superseding
AE-26156/3A
28 July 1998

PROCESS SPECIFICATION

**METSAT/KLM/AMSU-A1, SYSTEM COMPREHENSIVE
AND LIMITED PERFORMANCE TESTS
TEST PROCEDURE**

Contract No.: NAS5-32314

Prepared for:

NASA/Goddard Space Flight Center
Greenbelt Road
Greenbelt, MD 20771

Master Redline

Sl 373234

1331720-2-TST

OYER 0850

ECN # CAMSU 2091

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1. SCOPE

1.1 Scope. This specification establishes the requirements for the Comprehensive Performance Test (CPT) and Limited Performance Test (LPT) of the Advanced Microwave Sounding Unit-A1 (AMSU-A1), referred to herein as the unit. The unit is defined on Drawing 1331720.

1.2 Test procedure sequence. The sequence in which the several phases of this test procedure shall take place is shown in Figure 1, but the sequence can be in any order.

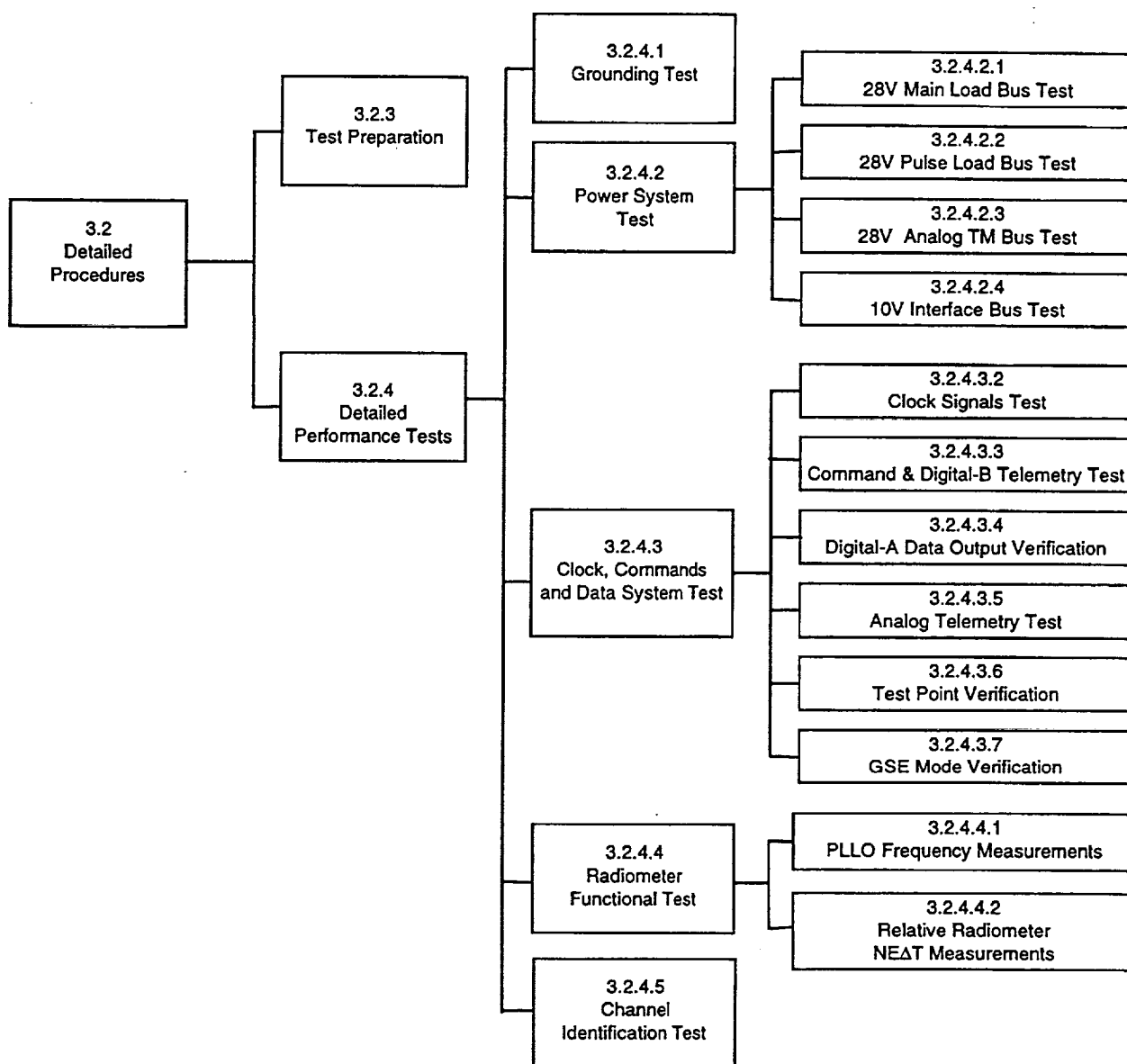


Figure 1. Test Procedure Sequence

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2. APPLICABLE DOCUMENTS

2.1 Government documents. The following documents form a part of this specification to the extent specified. Unless otherwise specified, the issue shown shall apply.

STANDARDS

Military

MIL-STD-45662	Calibration Systems Requirements
---------------	----------------------------------

OTHER DOCUMENTS

S-480-79	Performance Assurance Requirements for the EOS/METSAT Integrated Programs Advanced Microwave Sounding Unit-A (AMSU-A) (PAR)
S-480-80	Performance and Operation Specification for the EOS/METSAT Integrated Programs Advanced Microwave Sounding Unit-A (AMSU-A) (POS)
IS-2617547	AMSU-A1 Unique Instrument Interface Specification (UIIS)
IS-3267415	ATN-KLM General Instrument Interface Specification (GIIS)

(Copies of government documents should be obtained as indicated in the Department of Defense Index of Specification and Standards.)

2.2 Non-Government documents. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issue in effect on the date of testing shall apply.

2.2.1 Aerojet documents

SPECIFICATION

AE-26002/1	Test Procedure, Subsystem, Antenna Drive for AMSU-A1
AE-26157	Special Test Equipment (STE), Operation and Maintenance Manual
AE-26357	Transportation Handling Procedure for the AMSU-A System Integrated Program

STANDARD

STD-2454	Requirements for Electrostatic Discharge Control
----------	--

REPORT

10353	Contamination Control Plan for the Advanced Microwave Sounding Unit-A (AMSU-A)
-------	--

AE-26156/3B
10 Mar 99

DRAWINGS

1331720	Advanced Microwave Sounding Unit A1 (AMSU-A1)
1335695	Special Test Equipment
1356655	Console Assembly, METSAT and EOS STE

(Copies of Aerojet documents may be obtained from Gencorp Aerojet, Azusa Operations, CAGE 70143, P.O. Box 296, Azusa, California, 91702-0296).

3. REQUIREMENTS

3.1 General test requirements

3.1.1 Equipment and test facilities. The tests described herein shall be performed at Aerojet under laboratory conditions in an EMI shielded chamber for the first and final CPT. Other tests need not be accomplished in the EMI shielded chamber. The test equipment listed in Table I shall be used when performing the tests. If the specified equipment is not available, the equipment substituted shall provide a measurement accuracy equal to or greater than that of the specified equipment. The AMSU-A Special Test Equipment (STE) shall be used for activation and control of the unit and monitoring of its performance.

Table I. Equipment List

Item	Quantity	Item Description	Mfg.	Model
1	1	Dynamic signal analyzer	Hewlett-Packard	3562A
2	1	Signal Generator	Hewlett-Packard	3314A
3	1	Oscilloscope	Tektronix	2225A
4	1	9-pin breakout box	Aerojet	2536-3743/SK1358702-1
5	1	15-pin breakout box	Aerojet	2536-3744/SK1358703-1
6	2	25-pin breakout box	Aerojet	2336-3746/SK1358704-1
7	1	37-pin breakout box	Aerojet	2536-3745/SK1358705-1
8	1	Relay Board	Aerojet	—
9	1	Double Shielded Connector	—	—
10	1	Lab. General Purpose Power Supply	Hewlett-Packard	6114
11	1	Oscilloscope	Tektronix	466A
12	1	Power Supply	Power Designs	3650-S
13	1	WR19 Harmonic Mixer (40-60 GHz)	Hewlett-Packard	HP11970V
14	1	Power Meter	Anritsu	ML83A
15	1	WR19 Feed Horn	TRG	V861
16	1	LN2 Container	Cole	N03726-20
17	1	Spectrum Analyzer	Hewlett-Packard	8566B
18	1	STE Computer	Aerojet	1336695
19	1	STE Interface Cable J1	Aerojet	1335758-1
20	1	STE Interface Cable J2	Aerojet	1335752-1
21	1	STE Interface Cable J3	Aerojet	1335756-1
22	1	STE Interface Cable J4	Aerojet	1335755-1
23	1	STE Interface Cable J5	Aerojet	1335753-1
24	1	STE Interface Cable J6	Aerojet	1335754-1
25	1	STE Interface Cable J7	Aerojet	1335757-1
26	1	Oscilloscope Camera	Tektronix	—
27	1	Current Probe	Tektronix	AM503
28	1	Plotter	Hewlett-Packard	7475A
29	1	Frequency Counter	Hewlett-Packard	5316A
30	1	Multimeter (Digital volt-ohm meter)	Fluke	77

Table I. Equipment List (Continued)

Item	Quantity	Item Description	Mfg.	Model
31	1	Cold Target Stand A1-1	Aerojet	T-1291001-3
32	1	Cold Target Stand A1-2	Aerojet	T-1291001-2
33	2	Cold Target Support	Aerojet	T-1291000-1
34	1	Sweeper	Hewlett-Packard	83623A
35	1	Multiplier	Hewlett-Packard	83557A/83558A
36	1	Coupler/Detector	Hewlett-Packard	83557-60001
37	1	Spectrum Analyzer	Hewlett-Packard	8563E

3.1.2 Required procedures and operations. The unit shall be subjected to the examinations and tests specified in 3.2.4 and Table II.

3.1.2.1 Limited performance test (LPT). The Limited Performance Test shall consist of the test procedures specified in the LPT column of Table II.

3.1.2.2 Comprehensive performance test (CPT). Three versions of the Comprehensive Performance Test are identified in Table II. These are applicable for different test stages. The test procedures to be performed for each version are specified in the 1st CPT, Sub CPT, and Final CPT columns of Table II. See 3.1.1 for required location of the first and the final CPT.

3.1.3 Inspection instructions. The following shall apply to all inspections performed under this specification.

- a. **Personnel familiarization:** All personnel directly concerned with the conduct of the inspection shall become familiar with the entire content of this document before beginning the tests. Each step, including all notes, warnings, and cautions, shall be understood thoroughly before starting.
- b. **Referenced documents:** Performance of the tests specified herein may require reference to the documents listed in Section 2. It is recommended that the applicable issues of these documents be available at the time and place of testing.

3.1.4 Test conditions. The following paragraphs shall apply to all testing described in this document.

3.1.4.1 Standard ambient conditions. Unless otherwise specified in a detailed method paragraph, all handling shall be performed under the following laboratory ambient conditions.

- a. Handling in accordance with AE-26357
- b. Contamination control in accordance with Report 10353
- c. Temperature: $+23 \pm 10^{\circ}\text{C}$
- d. Pressure: 610 to 810 torr
- e. Humidity: $50 \pm 20\%$ (no condensation)
- f. The instrument shall be placed in its protective bag (1338427) when not in use.

Table II. AMSU-A1 Performance Tests

Paragraph	Test Description	1st CPT	LPT	Sub CPT	Final CPT
3.2.4.1	Grounding	X	X	X	X
3.2.4.2.1.1	+28 Main Load Bus (MLB) Turn-On Transient	X			X
3.2.4.2.1.2	+28 MLB Operating Power	X	Note 2	Note 3	X
3.2.4.2.1.3	Instrument Feedback Test	X			
3.2.4.2.1.4	Transient Susceptibility Test	X			
3.2.4.2.2	+28 Pulse Load Bus (PLB) Peak Current	X		Note 4	X
3.2.4.2.2.8	Instrument Feedback Test (PLB)	X			
3.2.4.2.2.9	Transient Susceptibility Test	X			
3.2.4.2.3	+28 Analog Telemetry Bus (ATB)	X		X	X
3.2.4.2.3.2	Instrument Feedback Test (ATB)	X			
3.2.4.2.3.3	Transient Susceptibility Test	X			
3.2.4.2.4	+10 V Interface Bus	X		X	X
3.2.4.2.4.2	Instrument Feedback Test	X			
3.2.4.2.5	Power Input Test for LPT		X		
3.2.4.3.2	Clock Signals	X			X
3.2.4.3.3	Commands and Digital-B Telemetry	X	X	X	X
3.2.4.3.4	Digital-A Data Output	X	Note 5	Note 5	X
3.2.4.3.5	Analog Telemetry	X	Note 6	Note 6	X
3.2.4.3.6	Test Points	X		X	X
3.2.4.3.7	GSE Mode	X Note 7			
3.2.4.4	Radiometer Functional	Title			
3.2.4.4.1	PLLO Frequency Measurement	X			X
3.2.4.4.2.2	Relative NEΔT	X	X	X	X
3.2.4.5	Channel Identification Test	X			
Notes: 1. Test Data Sheets for CPT/LPT located in Appendix A. 2. 3.2.4.2.5 (Power input test for LPT). 3. At 28 V only. 4. 3.2.4.2.2 except 3.2.4.2.2.6. 5. Only full scan. 6. STE only. 7. GSE mode test/verification is not required and is for engineering use only.					

3.1.4.2 Test tolerances. The tolerances allowed on test conditions are intended only to provide for accuracy of such items as instrumentation and controls. Conditions shall be as close as possible to the nominal or center values specified, and in no instance shall they exceed the tolerances specified. Unless otherwise specified, the tolerances shall be within $\pm 10\%$.

3.1.4.3 Read-out accuracy. Parameters are specified either as limits or as nominal values with plus-or-minus tolerances. These limits and tolerances shall be regarded as absolute, and the inaccuracies of measuring equipment shall not be interpreted as part of measured values in such a way that out-of-limit measurements may appear in-limit.

3.1.5 Electrostatic Sensitive Device (ESD) handling. All electronic hardware shall be handled in accordance with Aerojet Standard STD-2454.

3.2 Detailed Procedures

3.2.1 Responsibility for inspection. All tests specified herein shall be performed under the cognizance of Aerojet Quality Assurance.

3.2.2 Monitoring procedures for equipment. Test equipment calibration schedules and procedures shall comply with the requirements of MIL-STD-45662. Before performing examinations and tests in accordance with this procedure, all test equipment to be used shall be verified as being within their current calibration period. Calibration or alignment, necessary for operation of the equipment within the requirements of this document, shall be performed when required.

3.2.3 Test preparation

3.2.3.1 STE connection. The power sources, signal sources, and loads are provided to the unit under test by the AMSU-A Special Test Equipment (STE) (Drawing 1335695 or 1356655), in accordance with paragraph 5.2 of S-480-80. The STE is automated test equipment controlled by a MicroVax computer. The unit shall be connected to the STE in accordance with AE-26157 and the detailed test procedures in 3.2.4.

3.2.3.2 Signal sources. Signal sources required during the performance test but not provided by the STE are as follows:

- a. Cold background at LN₂ temperature at room ambient.
- b. +28 ± 1 Vdc, 3 Amps.

3.2.3.3 Signal outputs. Signal outputs, except for the test signals at J7, shall be monitored by the STE. The signal outputs at J7 are shown in Figure 2.

3.2.3.4 Test software. AMSU-A1 bonded software shall be used to operate the STE. During initialization of the STE, as specified in AE-26157, the A1 software shall be selected. The bonded software is being selected by the STE computer automatically during initialization of the STE.

3.2.3.5 Initial turn-on. When called for in the individual test procedures, turn on the unit as follows:

1. Turn on the STE and initialize the STE as specified in AE-26157.
2. Connect breakout box to J1 on the STE +28 V power supply cable J1.
3. Connect DVM to J1-1 (+) and J1-3 (RTN).
4. Verify that the STE power supply POWER switch on the STE +28 V power supply is ON and the power supply is adjusted to +28 ±0.5 Vdc.
5. Verify that the PWR and SW/TM switches on the STE power distribution unit are ON.
6. Enter the serial number (decimal equivalent of the identification number provided in the UIIS) for the unit under test using AE-26157, if necessary. Verify that the Main Menu (AMSU-A1 WHAT TYPE OF TEST?) is displayed on the STE CRT terminal display.
7. On the Main Menu, press the [2] MONITOR ONLY touch area (or type the number). The Monitor Only Menu will be displayed, with Block Monitor Data Select options shown in the middle (window) area of the screen.

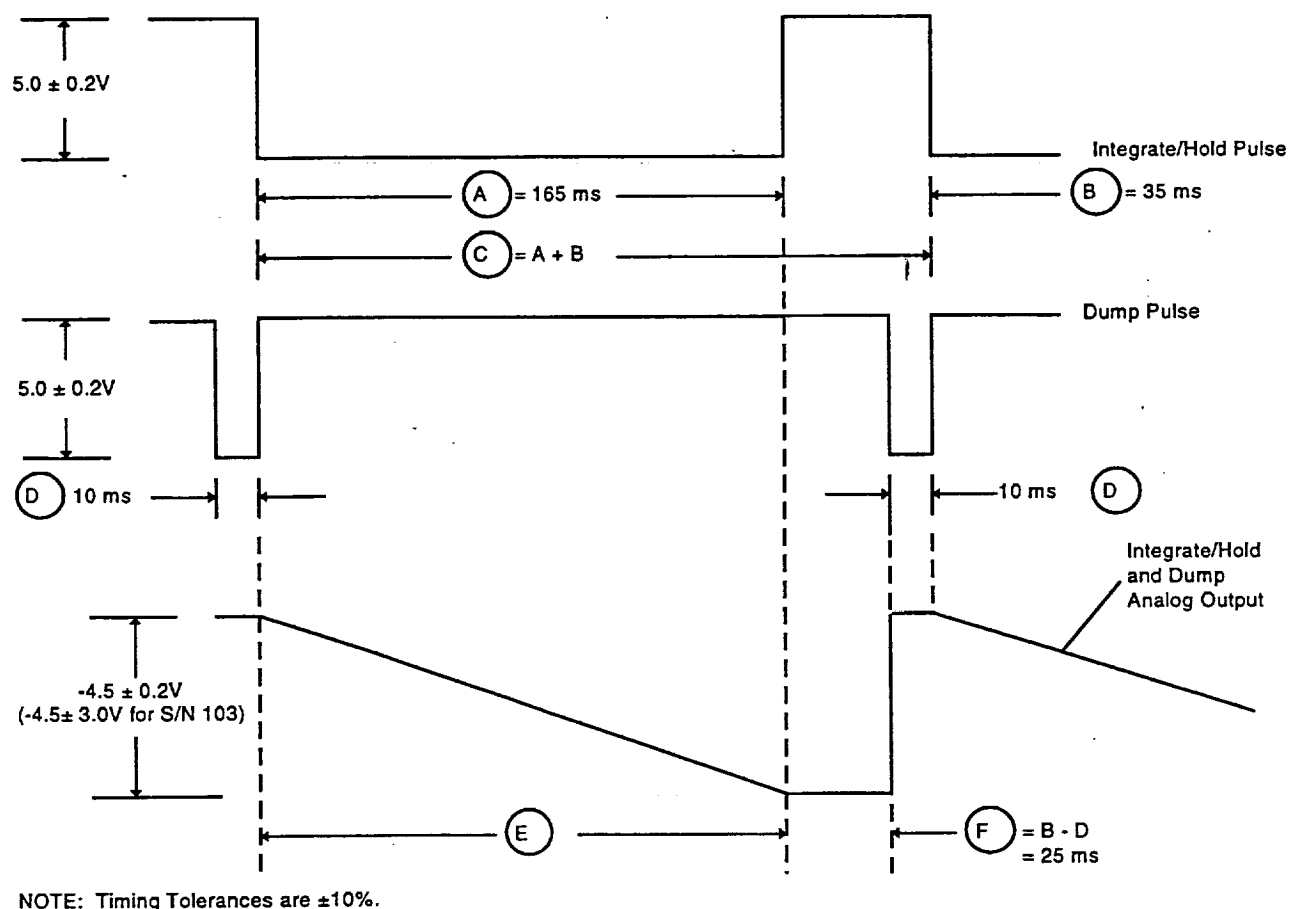


Figure 2. Signal Output at J7

8. On the Monitor Only Menu, press [14] COMMANDS. The Commands Menu will be displayed in the window area.
9. On the Commands Menu, press [9] MODULE POWER = CONNECT. Wait at least 18 seconds for command execution. This applies power to the unit.
10. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

11. Wait at least 18 seconds and observe the commands are acknowledged by STE.

12. Verify that the STE power supply is adjusted to $+28 \pm 0.5$ Vdc (see steps 2 through 4).
13. Verify that all breakout box switches are in the closed position.
14. According to the individual test procedures, execute commands as necessary to obtain the required commands configuration. Several commands can be executed at the same time.

3.2.3.6 Turn-off methods. The unit can be turned off immediately by pressing [9] MODULE POWER = DISCONNECT on the Commands Menu. For a phased shutdown, press [11] MODULE TOTALLY OFF = OFF on the Commands Menu or press POWER [4] OFF on any display. When connecting breakout boxes to the unit or STE connectors, verify that the unit power is off and the STE +28 V power supply is manually turned off.

NOTE

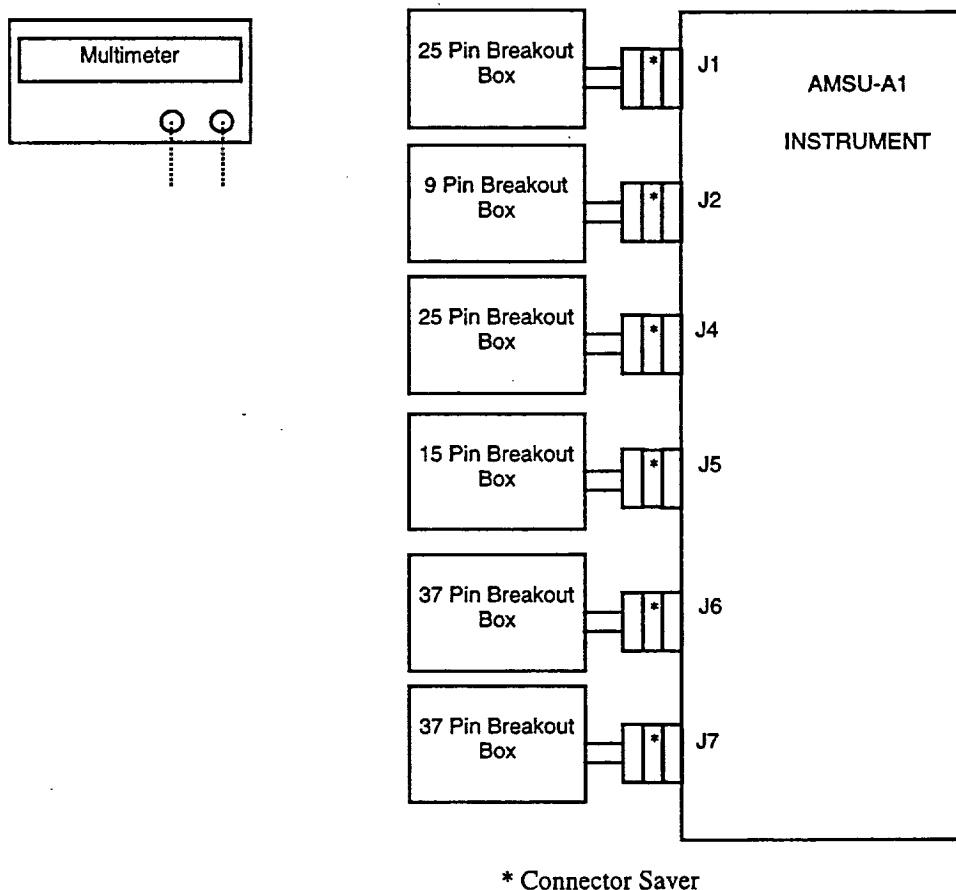
If power of the unit is turned off by command [9] MODULE POWER = DISCONNECT or the STE program is interrupted, then perform a phased shutdown after turn-on before starting next step.

3.2.4 Detailed performance tests. The comprehensive performance tests for the AMSU-A1 system are to be carried out on the fully assembled and operational unit. The tests to be performed are as follows:

- a. Grounding/Isolation system test.
- b. Power system test.
- c. Clock commands and data system test.
- d. Radiometer functional test.
- e. Transient susceptibility test.
- f. Instrument feedback test.

3.2.4.1 Grounding test. This test provides the verification of the unit grounding requirements of GHS IS-3267415 Paragraph 3.1.1 and UHS IS-2617547 paragraph 3.1.1.

1. Connect breakout boxes to each of the spacecraft interface connectors J1 through J7 as shown in Figure 3. Verify that all connectors are protected with connector savers.
2. Measure and record continuity or isolation between the points shown on Test Data Sheet (TDS) 1.



* Connector Saver

Figure 3. Grounding Test Setup

3.2.4.2 Power system, transient susceptibility, power quality, and instrument feedback tests. The purpose of these tests is to verify power system compliance in regard to:

- a. Turn-On transients
- b. Operating power
- c. Transient susceptibility
- d. Current ripple

The following DC voltage lines will be tested for the above parameters:

- a. +28 V Main Load Bus (parameters a, b, c, d)
- b. +28 V Pulse Load Bus (parameters a, b, c, d)
- c. +28 V Analog Telemetry Bus (parameters b, c, d)
- d. +10 V Interface Bus (parameters b, d)

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4.4.2.1 +28 V main load bus test

3.2.4.2.1.1 +28 V MLB during turn on transient. The +28 V MLB (at 28.56 Vdc) during turn on, shall be verified as follows:

1. Configure the unit and test equipment as shown in Figure 4. Obtain DSA trigger from J4-14. Verify that switches 1, 2, 14 and 15 of the breakout box are in the OPEN position. Disconnect +28 Vdc external power supply output at J1 and adjust the power supply to read 28.56 ± 0.05 Vdc on voltmeter. Re-connect the power supply output (J1) as shown in Figure 4.
2. Configure the Dynamic Signal Analyzer (DSA) as follows:

Select MEAS MODE	Select INPUT COUPLE
Select <i>Time Capture</i>	Select <i>CH1 DC</i>
Select <i>Capture Select</i>	Select <i>CH1 Ground</i>
Select <i>Capture Length</i> ; Enter 300.0; Select <i>msec</i>	Select INPUT TRIG
Select FREQ	Select <i>Trig Level</i> ; Enter 100; Select <i>mV</i>
Select <i>E SMPL Off</i>	Select <i>Arm AU</i>
Select <i>Freq Span</i> ; Enter 25; Select <i>kHz</i>	Select <i>Ext</i> ; Select <i>(-) Slope</i>
Select SELECT MEAS	Select TRIG DELAY
Select <i>Power Spec</i>	Enter 0; Select <i>μSec</i>
Select <i>CH1 Active</i>	Select COORD
Select WINDOW	Select <i>Real</i>
Select <i>Hann</i>	Select VIEW INPUT
Select SOURCE	Select <i>Time Buff</i>
Select <i>Source Off</i>	Select SCALE
Select AVG	Select <i>X Fixd Scale</i> ; Enter 0.0, 300; Select <i>msec</i>
Select <i>Avg Off</i>	Select <i>Y Fixd Scale</i> ; Enter 0.80; Select <i>mV</i>
Select <i>Tim Av Off</i>	Select UNITS
Select RANGE	Select <i>Hz (sec)</i>
Select <i>Chan 1 Range</i> ; Enter 1; Select <i>V</i>	

NOTE

Prior to collecting any current data, the current meter and DSA have to be "zeroed out"; zero current reference has to be established on the DSA. Follow this interim procedure to zero reference the current meter and DSA.

- a) Select 1.0 A/10mV per div. on the current amplifier.
- b) Remove the current probe from the circuit and close the probe. Place the probe in a magnetic benign location.
- c) Adjust the "y" axis voltage range to ± 4 mV.
- d) Place the DSA in "Free Run" Trigger and depress "Start Capture" on the DSA.
- e) With the "capture in process", adjust the "output DC level" control on the current amplifier to indicate zero current on the DSA.
- f) Position the current probe to its original location in accordance with Figure 4, and return the DSA to "Ext" trigger.

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3. Turn the unit ON by selecting [9] MODULE POWER; set up the operating modes as defined in paragraph 3.2.3.5 (reference the command screen parameters below). If necessary, adjust the external power supply for 28 Vdc.

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

4. Turn the unit OFF by executing command [9] MODULE POWER. Confirm the command has been executed on the STE display.
5. Start the DSA signal capture by depressing "Start Capture"; wait for the DSA message "waiting for trigger" before proceeding.
6. On the STE computer, select [9] MODULE POWER and obtain a record of the +28 MLB Turn-On current waveform. On the STE computer, select [9] MODULE POWER to turn the instrument's power OFF. Adjust the display time base and voltage sensitivity to allow for adequate current and pulse duration measurements (refer to Figure 5 or Figure 6 for an example of per division values). Plot the obtained waveform and attach a hard copy of the scan to TDS 2.
7. Measure the Turn-On time to reach steady state current; record this value on TDS 2.
8. Compute the peak current as follows:
 Measure the maximum Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 1.0 A/10 mV per division, and the maximum Y value = 46.8 mV:

$$46.8 \text{ mV} \times (1.0 \text{ A}/10 \text{ mV}) = 4.68 \text{ amps}$$
 Record this value on TDS 2.
9. The 1st derivative of the current waveform must be calculated. Compute the dI/dT as follows:
 The most probable location of the greatest current demand is during the first positive transition after voltage application. If this is the case, expand that segment of the display and measure the greatest voltage transition in the smallest time transition. The change in voltage times the current/div as selected on the current amplifier produces the change in current. Next divide this change in current by the change in time (in microseconds). This value is dI/dT. Example:
 Change in voltage35.29 mV
 Change in time (microseconds).....31.25 μ s
 Current/div on current amplifier1000 mA/10 mV

$$35.29 \text{ mV} \times (1000 \text{ mA}/10 \text{ mV})/31.25 \mu\text{s} = 112.9 \text{ mA}/\mu\text{s}$$
10. Record the computed value on TDS 2.
11. With the multimeter, adjust the external power supply to 27.44 ± 0.05 Vdc as measured between J1-1 (high) and J1-3 (low).

12. Repeat steps 3 through 10.
13. With the multimeter, adjust the external power supply to 28.00 ± 0.05 Vdc as measured between J1-1 (high) and J1-3 (low).
14. Repeat steps 3 through 10.

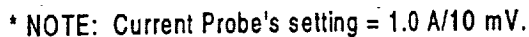
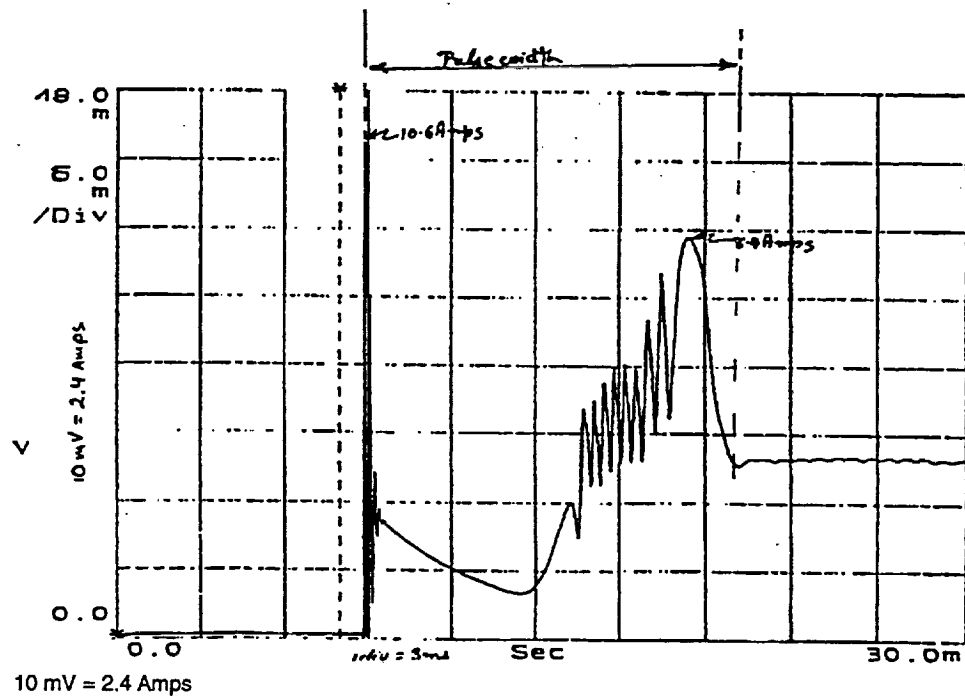
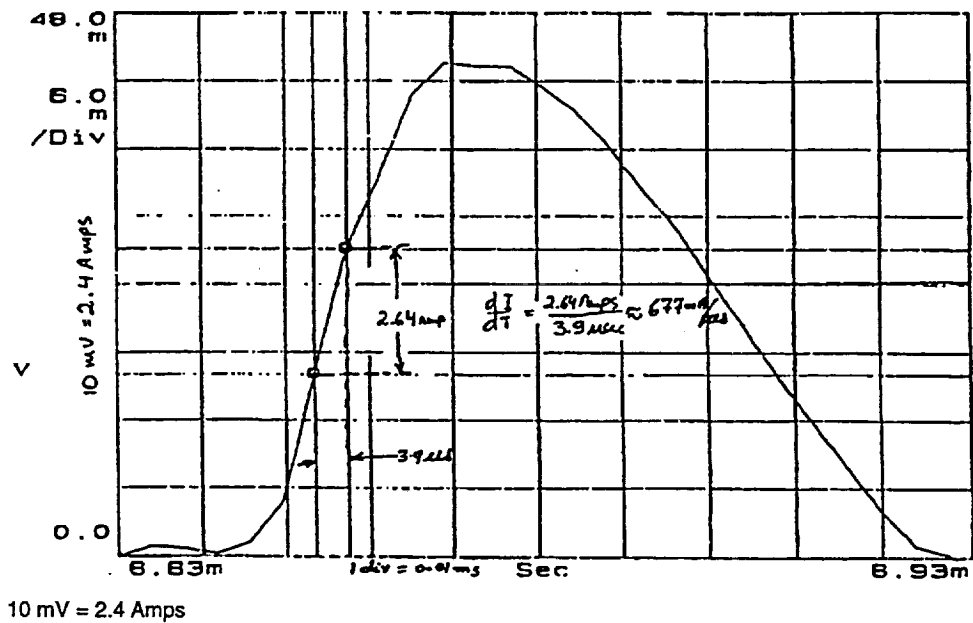


Figure 4. +28 V Main Load Bus Verification Setup

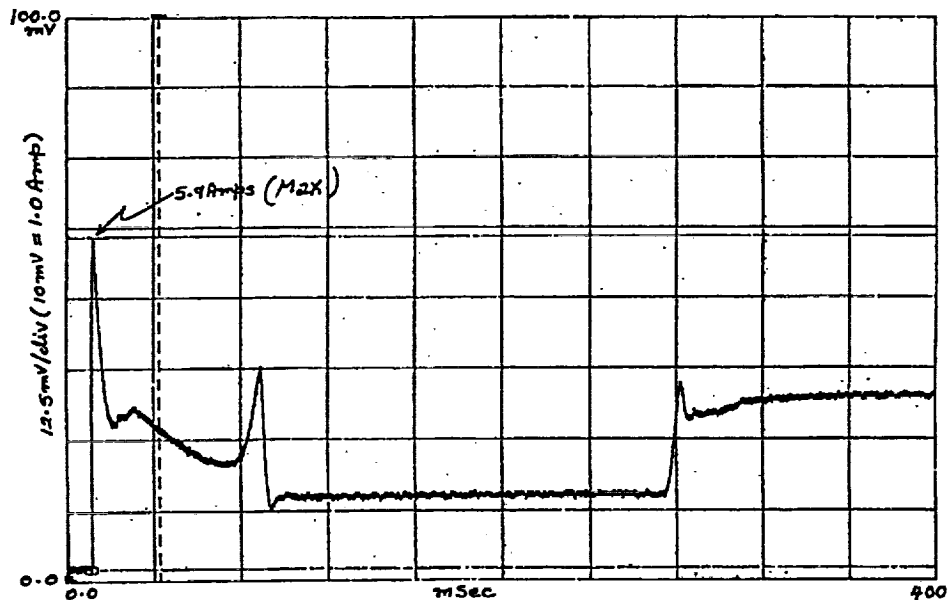


AMSU-A1 (S/N 102) Main Load Bus Worst Case Transient

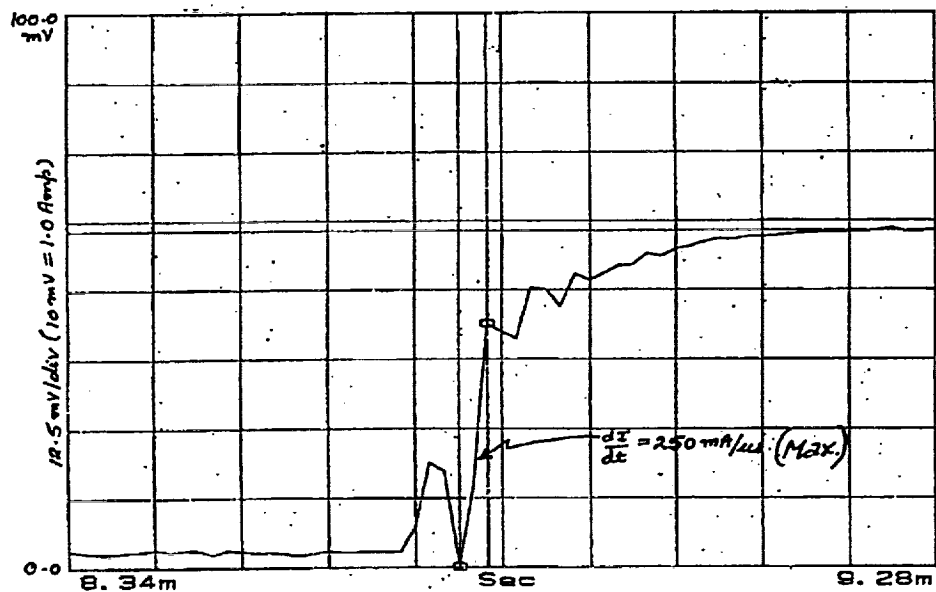


AMSU-A1 (S/N 102) Main Load Bus $\frac{dI}{dT}$ at Worst Case Transient

Figure 5. +28 V Main Bus Load Peak Power for KLM (S/N 102, 103 and 104)



AMSU-A1 Main Load Bus Worst Case Turn-on Transient



AMSU-A1 Main Load Bus $\frac{dI}{dt}$ at Worst Case Turn-on Transient

Figure 6. +28 V Main Bus Load Peak Power for METSAT (S/N 105 and up)

e, and power as follows:

rify that switches 1, 2, 14 and 15 of the

external power supply, turn power supplies
1.1, step 3. While monitoring voltmeter
figure 4). Record the voltage displayed on

age on TDS 3.

ge on TDS 3.

ECT.

Following paragraphs will be performed
I not exceed 150 mA, and frequency
equency component, it shall not be a

Vdc MLB ripple current measurement

n DSA trigger from J2-7. Select 20.0





1-4

- 5 ENTER COMMAND [18] PLL POWER TO CHANGE FROM PLO #1 TO PLO #2 ACTIVE. ALLOW THE INSTRUMENT TO STABILIZE FOR A MINIMUM OF TWO MINUTES
- 6 RECORD THE OPERATING CURRENT ON TDS 3
- 7 COMPUTE THE OPERATING POWER (IN WATTS) AS EXPLAINED IN TDS 3
- 8 ENTER COMMAND [18] PLL POWER TO CHANGE FROM PLO #2 BACK TO PLO #1 ACTIVE, ALLOW THE INSTRUMENT TO STABILIZE FOR A MINIMUM OF TWO MINUTES

9-11

12 Repeat of 5 THROUGH 8

13

14

15

16-18

19 Repeat of 5 THROUGH 8

20

21

22

2. Set up the DSA as follows:

Select **MEAS MODE**
 Select *Time Capture*
 Select *Capture Select*
 Select *Capture Length*; Enter 1; Select *Record*
 Select **FREQ**
 Select *Freq Span*; Enter 100.0; Select *Hz*
 Select *E SMPL Off*
 Select *Time Length*; Enter 8.0; Select *Sec*
 Select **SELECT MEAS**
 Select *Power Spec*
 Select *CHI Active*
 Select **WINDOW**
 Select *Hann*
 Select **SOURCE**
 Select *Source Off*
 Select **AVG**
 Select *Avg Off*
 Select *Tim Av Off*
 Select **RANGE**
 Select *Aut 1 Rng up*

Select **INPUT COUPLE**
 Select *CHI DC*
 Select *CHI Ground*
 Select **SELECT TRIG**
 Select *Trig Level*; Enter 10; Select *mV*
 Select *Arm AU*
 Select *Free Run*
 Select **TRIG DELAY**
 Enter 0.0; Select *Sec*
 Select **COORD**
 Select *Real*
 Select **VIEW INPUT**
 Select *Time Buff*
 Select **SCALE**
 Select *X Fixd Scale*; Enter 0.0, 8.0; Select *Sec*
 Select *Y Fixd Scale*; Enter -10.0, 70.0; Select *mV*
 Select **UNITS**
 Select *Hz (sec)*

3. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
4. Acquire 8 seconds of data on the DSA by depressing "Start Capture".
5. Turn OFF the "X" cursor, if it is ON. Turn the "X" cursor ON. The cursor will appear at the largest peak. Make a plot of this display.
6. Select the X-axis scale for 500 ms with the highest peak approximately in the center of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak-to-peak current. Make a plot of this display.
7. Compute the peak-to-peak current as follows:
 Multiply the delta Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 2 mA/10 mV per division, and the delta Y value = 276 μ V:

$$0.276 \text{ mV} \times (2 \text{ mA}/10 \text{ mV}) = 0.0552 \text{ mA}$$

Record this value on TDS 52.

3.2.4.2.1.4 Transient susceptibility and power quality tests. The power tests that follow will demonstrate the AMSU-A1 instrument will operate within specified parameters when the transients (low and high frequency) are applied directly to the power lines.

3.2.4.2.1.4.1 Equipment setup. Set up the test equipment and connect to the instrument as shown in Figure 7.

3.2.4.2.1.4.2 Low frequency load induced transients. The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the power line at the amplitude and duration specified in Figure 8. Perform the Low Frequency Load Induced Transients test as follows:

1. With the exception of the external power supply, turn ON all the test equipment.

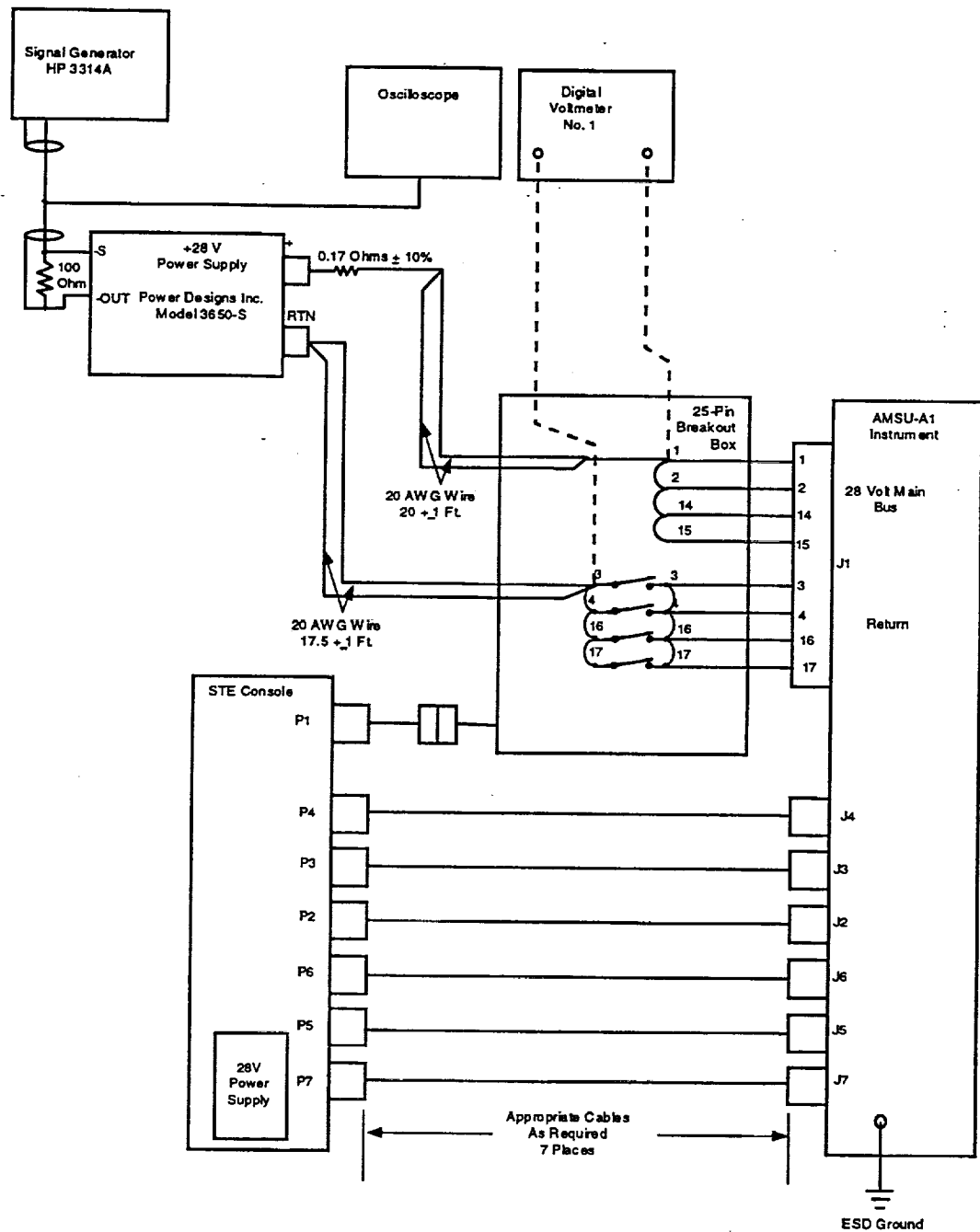
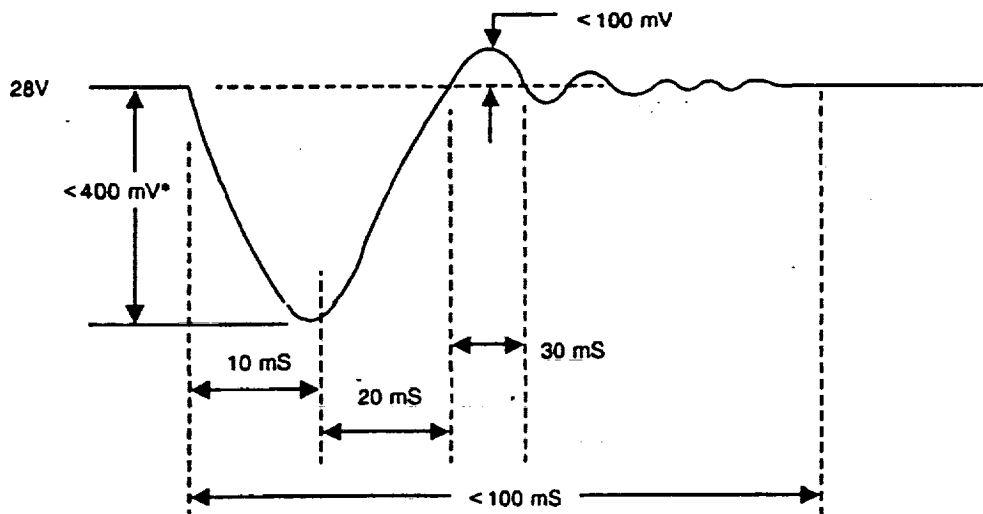


Figure 7. +28 V MLB Transient Susceptibility and Power Quality Tests Setup



* Typical transients occurring a number of times per orbit are on the order of 200 mV zero-to-peak for a 1.5A load change.

Figure 8. Load Induced Transient (Main Bus)

2. Place the signal generator in ARB 0 mode. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator to attain the signal characteristics as shown in Figure 8.
3. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
5. Acquire one Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
6. Connect the signal generator to the external power supply. Wait for the instrument to complete three scans. Remove the signal generator output from the power supply.
7. Acquire one Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
8. Record any deviations in the functional performance of the AMSU instrument on TDS 51.

3.2.4.2.1.4.3 High frequency load induced transients. The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the power line. The interfering frequencies are simulated by using the triangular wave output of the signal generator. There are three signals to be sequentially injected; the frequencies and amplitudes as produced by the signal generator and measured by the oscilloscope are:

<u>Frequency (Hz)</u>	<u>Amplitude</u>
1.43	200 mVpp
2.86	1.00 Vpp
6.67	1.50 Vpp

Tolerance on the above values is $\pm 10\%$.

Perform High Frequency Load Induced Transients as follows:

1. With the exception of the external power supply, turn ON all the test equipment.
2. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator output as follows:

amplitude	200 mVpp
offset	0.000 V
frequency	1.430 Hz
3. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
5. Acquire one Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
6. Connect the signal generator to the external power supply. Wait for the instrument to complete three scans. Remove the signal generator output from the power supply.
7. Acquire one Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
8. Repeat steps 2-4 and 6-7 for 2.86 Hz and 1.0 Vpp.
9. Repeat steps 2-4 and 6-7 for 6.67 Hz and 1.5 Vpp.
10. Record any deviations in the functional performance of the AMSU instrument on TDS 51.

3.2.4.2.2 +28 V pulse load bus test

3.2.4.2.2.1 PLB during the first two seconds. The PLB operation, during the first two seconds, shall be verified as follows:

1. Configure the unit and test equipment as indicated in Figure 9. Obtain DSA trigger from J2-7. Verify that switches 5, 6, 18 and 19 of the breakout box are in the OPEN position.
2. Disconnect +28 Vdc external power supply output and adjust the power supply to read 28.00 ± 0.05 Vdc by using DVM. Re-connect power supply output as shown in Figure 9.

3. Configure the dynamic signal analyzer as follows:

Select **MEAS MODE**

Select *Time Capture*

Select *Capture Select*

Select *Capture Length*; Enter *1*; Select *Record*

Select **FREQ**

Select *Freq Span*; Enter *100*; Select *Hz*

Select *E SMPL Off*

Select *Time Length*; Enter *8.0*; Select *Sec*

Select **SELECT MEAS**

Select *Power Spec*

Select *CH1 Active*

Select **WINDOW**

Select *Hann*

Select **SOURCE**

Select *Source Off*

Select **AVG**

Select *Avg Off*

Select *Tim Av Off*

Select **RANGE**

Select *Aut 1 Rng up*

Select **INPUT COUPLE**

Select *CH1 DC*

Select *CH1 Ground*

Select **INPUT TRIG**

Select *Trig Level*; Enter *1.5*; Select *V*

Select *Arm AU*

Select *Ext*

Select *Slope -*

Select **TRIG DELAY**

Enter *0.0*; Select *Sec*

Select **COORD**

Select *Real*

Select **VIEW INPUT**

Select *Time Buff*

Select **SCALE**

Select *X Fixd Scale*; Enter *0.0, 8.0*; Select *Sec*

Select *Y Fixd Scale*; Enter *-10.0, 70.0*; Select *mV*

Select **UNITS**

Select *Hz (sec)*

NOTE

Prior to collecting any current data, the current meter and DSA have to be "zeroed out"; zero current reference has to be established on the DSA. Follow this interim procedure to zero reference the current meter and DSA.

- a) Select 200 mA/10mV per div. on the current amplifier.
- b) Remove the current probe from the circuit and close the probe. Place the probe in a magnetic benign location.
- c) Adjust the "y" axis voltage range to ± 4 mV.
- d) Place the DSA in "Free Run" Trigger and depress "Start Capture" on the DSA.
- e) With the "capture in process", adjust the "output DC level" control on the current amplifier to indicate zero current on the DSA.
- f) Position the current probe to its original location in accordance with Figure 9, and return the DSA to "Ext" trigger.

The instrument is now ready to capture and plot 8 seconds of data.



4. Adjust external power supply for +28 Vdc. Turn the unit ON by selecting [9] MODULE POWER, set up the operating modes as defined in paragraph 3.2.3.5 (reference the command screen parameters below). If necessary, re-adjust the external power supply for 28 Vdc.

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4]: ON			

5. Start the DSA signal capture by depressing "Start Capture".
6. Obtain the first 2 second PLB current waveform by selecting 0 to 2 seconds time span. Refer to Figure 10 for a typical waveform. Turn OFF the "X" cursor if it is ON. Turn the "X" cursor ON. The cursor will appear at the highest peak. Ensure this value is less than or equal to 1.3 amps. Record value on TDS 4.
7. Compute the peak current as follows:
Multiply the maximum Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 200 mA/10 mV per division, and the maximum Y value = 276 mV:

$$60 \text{ mV} \times (200 \text{ mA}/10 \text{ mV}) = 1200 \text{ mA} = 1.20 \text{ amps}$$

3.2.4.2.2.2 PLB measured from 2 to 4 seconds. The PLB operation, from 2 to 4 seconds, shall be verified as follows:

1. Reset the dynamic analyzer in accordance with 3.2.4.2.2.1(2).
2. Change the PRE-TRIGGER DELAY setting of the dynamic signal analyzer to 1.9 seconds.
3. Obtain a hard copy of the signal displayed on the dynamic signal analyzer (refer to Figure 10 for typical waveform).
4. From the hard copy obtained in step 3, calculate the peak current. Record the peak current and bus current values during the integrate/hold, dump (I/H, D) time period (refer to Figure 10) on TDS 4.

3.2.4.2.2.3 PLB measured from 4 to 6 seconds. The PLB operation, from 4 to 6 seconds, shall be verified as follows:

1. Reset the dynamic analyzer in accordance with 3.2.4.2.2.1(2).
2. Change the PRE-TRIGGER DELAY setting of the dynamic signal analyzer to 3.9 seconds.
3. Obtain a hard copy of the signal displayed on the dynamic signal analyzer (refer to Figure 10 for typical waveform).
4. From the hard copy obtained in step 3, calculate the peak current. Record the peak current and bus current values during the integrate/hold, dump (I/H, D) time period (refer to Figure 10) on TDS 4.

3.2.4.2.2.4 PLB measured from 6 to 8 seconds. The PLB shall be measured as follows:

1. Reset the dynamic analyzer in accordance with 3.2.4.2.2.1(2).

2. Change the PRE-TRIGGER DELAY setting of the dynamic signal analyzer to 5.9 seconds.
3. Obtain a hard copy of the signal displayed on the dynamic signal analyzer.
4. From the hard copy obtained in step 3, calculate the peak current. Record the peak current and bus current values during the integrate/hold, dump (I/H, D) time period (refer to Figure 10) on TDS 4.

3.2.4.2.2.5 Eight second integrated current measurement. To observe the PLB integrated (8 sec.) current waveform on the dynamic signal analyzer, configure the dynamic signal analyzer as follows:

Select **SCALE**

Select X Fxd Scale; Enter 0.0, 8; Select Sec

Select Y Fxd Scale; Enter -10, 70; Select mV

Select **VIEW INPUT**

Select Time Record: Note – the display heading changes to read “Cap Tim Rec”

Select **MATH**

Select Next

Select **Intgrt:**

Note – the display changes to present an integrated value of the current waveform.

Select **X (cursor)**

Move the X marker to the maximum right of the display. The Y value is indicative of the integrated current value over the entire 8 second period (in amp-sec).

Multiply the maximum Y value by the current/div as selected on the current amplifier, then divide by 8 seconds to acquire the average current value. As an example: if the current amplifier is set up to display 200 mA/10 mV per division, and the maximum Y value = 32.4 mV-sec:

$$[32.4 \text{ mV-sec} \times (200 \text{ mA}/10 \text{ mV})]/8 \text{ sec} = 81 \text{ mA}$$

Enter the calculated integrated value on TDS 4.

3.2.4.2.2.6 PLB turn-on transient

1. Configure the unit and test equipment as shown in Figure 9. Obtain DSA trigger from J4-14. Verify that switches 5, 6, 18 and 19 of the breakout box are in the OPEN position.

2. Configure the Dynamic Signal Analyzer (DSA) as follows:

Select MEAS MODE	Select INPUT COUPLE
Select <i>Time Capture</i>	Select <i>CH1 DC</i>
Select <i>Capture Select</i>	Select <i>CH1 Ground</i>
Select <i>Capture Length</i> ; Enter 500.0; Select <i>msec</i>	Select INPUT TRIG
Select FREQ	Select <i>Trig Level</i> ; Enter 1; Select <i>V</i>
Select <i>Freq Span</i> ; Enter 20; Select <i>kHz</i>	Select <i>Arm AU</i>
Select <i>E SMPL Off</i>	Select <i>Extrenal</i>
Select <i>Time Length</i> ; Enter 32.0;	Select <i>Ext</i> ; Select <i>Slope(-)</i>
Select <i>msec</i>	Select TRIG DELAY
Select SELECT MEAS	Enter 0; Select <i>μSec</i>
Select <i>Power Spec</i>	Select COORD
Select <i>CH1 Active</i>	Select <i>Real</i>
Select WINDOW	Select VIEW INPUT
Select <i>Hann</i>	Select <i>Time Buff</i>
Select SOURCE	Select SCALE
Select <i>Source Off</i>	Select <i>X Fixd Scale</i> ; Enter 0.0, 25
Select AVG	Select <i>msec</i>
Select <i>Avg Off</i>	Select <i>Y Fixd Scale</i> ; Enter -10, 470
Select <i>Tim Av Off</i>	Select <i>mV</i>
Select RANGE	Select UNITS
Select <i>Chan 1 Range</i> ; Enter 1; Select <i>V</i>	Select <i>Hz (sec)</i>

NOTE

Prior to collecting any current data, the current meter and DSA have to be "zeroed out"; zero current reference has to be established on the DSA. Follow this interim procedure to zero reference the current meter and DSA.

- a) Select 200 mA/10mV per div. on the current amplifier.
- b) Remove the current probe from the circuit and close the probe. Place the probe in a magnetic benign location.
- c) Adjust the "y" axis voltage range to ± 4 mV.
- d) Place the DSA in "Free Run" Trigger and depress "Start Capture" on the DSA.
- e) With the "capture in process", adjust the "output DC level" control on the current amplifier to indicate zero current on the DSA.
- f) Position the current probe to its original location in accordance with Figure 9, and return the DSA to "Ext" trigger.

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3. Adjust external power supply for +28 Vdc. Turn the unit ON by selecting [9] MODULE POWER; set up the operating modes as defined in paragraph 3.2.3.5 (reference the command screen parameters below). If necessary, re-adjust the external power supply for 28 Vdc.

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

4. Turn the unit OFF by executing command [9] MODULE POWER. Confirm the command has been executed on the STE display.
5. Start the DSA signal capture by depressing "Start Capture"; wait for the DSA message "waiting for trigger" before proceeding.
6. On the STE computer, select [9] MODULE POWER and obtain a record of the +28 PLB Turn on current waveform. On the STE computer, select [9] MODULE POWER to turn the instrument's power OFF. Adjust the display time base and voltage sensitivity to allow for adequate current and pulse duration measurements. Plot the obtained waveform and attach a hard copy of the scan to TDS 4. Refer to Figure 11 for an example of the expected waveform.
7. Measure the Turn-On pulse width; record this value on TDS 4.
8. Compute the peak current as follows:

Measure the maximum Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 200 mA/10 mV per division, and the maximum Y value = 276 mV:

$$276 \text{ mV} \times (200 \text{ mA}/10 \text{ mV}) = 5520 \text{ mA} = 5.52 \text{ amps}$$

Record this value on TDS 4.

9. The 1st derivative of the current waveform must be calculated. Compute the dI/dT as follows:

The most probable location of the greatest current demand is during the first positive transition after voltage application. If this is the case, expand the segment of the display and measure the greatest voltage transition in the smallest time transition. The change in voltage times the current/div as selected on the current amplifier produces the change in current. Next divide this change in current by the change in time (in microseconds). This value is dI/dT. Example:

Change in voltage144 mV
 Change in time (microseconds).....19.5 μ s
 Current/div on current amplifier200 mA/10 mV

$$144 \text{ mV} \times (200 \text{ mA}/10 \text{ mV})/19.5 \mu\text{s} = 147.7 \text{ mA}/\mu\text{s}$$

10. Record the computed value on TDS 4.

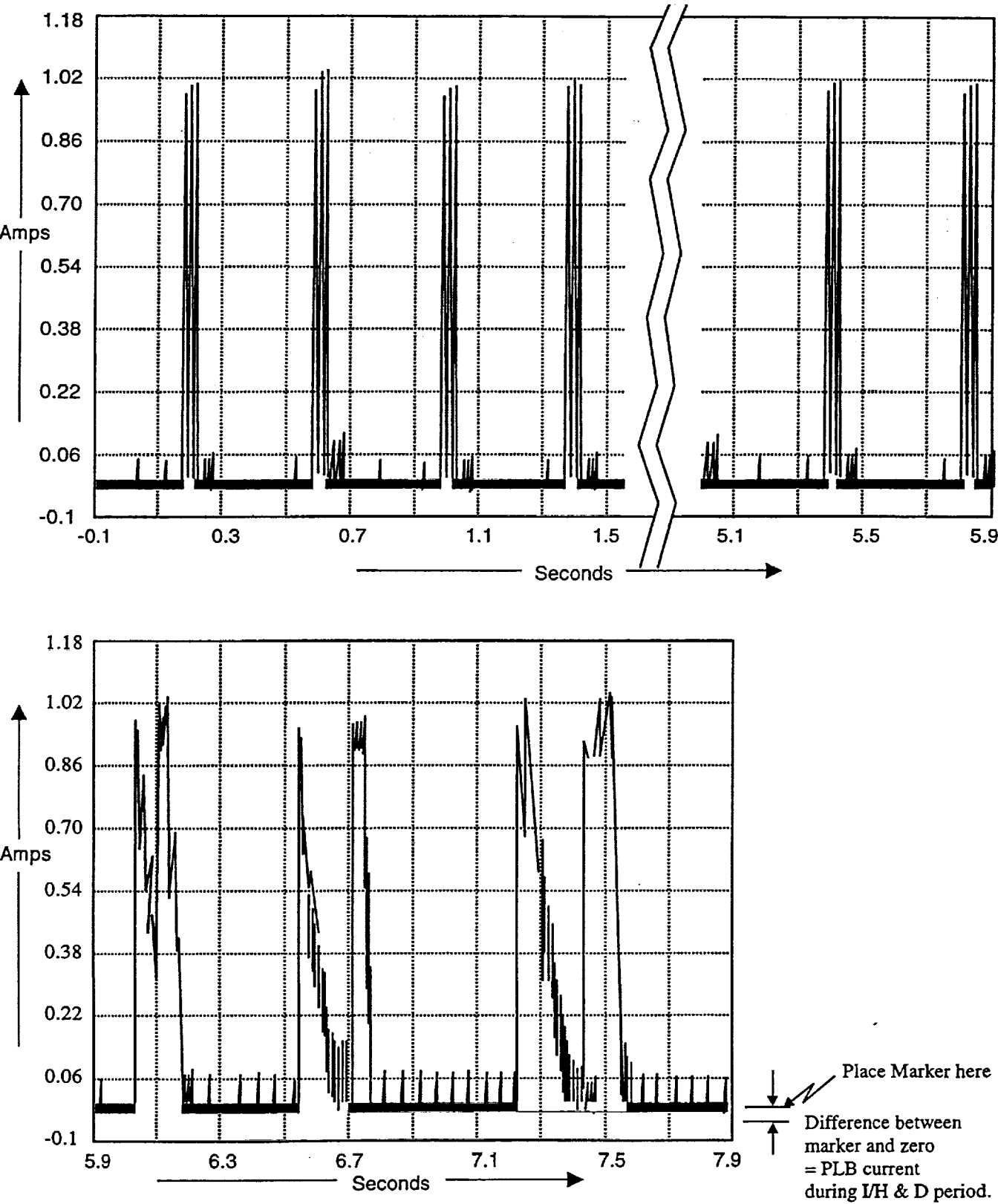


Figure 10. Typical Load Current Waveforms from the +28 V Pulse Load Bus

3.2.4.2.2.7 PLB current in warm cal, cold cal and Nadir mode

1. Place instrument in Warm Cal mode.
2. Measure and record PLB steady state current on TDS 4 with a multimeter in the Current mode.
3. Repeat step 2 after placing instrument in Cold Cal mode.
4. Repeat step 2 after placing instrument in Nadir mode.

3.2.4.2.2.8 Instrument feedback test (PLB). The instrument feedback test contained in the following paragraphs will be performed on the 28 Vdc Pulse Load power line. The peak-to-peak ripple current shall not exceed 43 mA while the instrument is in the Warm Cal mode.

3.2.4.2.2.8.1 28 Vdc pulse load bus ripple current measurement

1. Connect the instrument and test equipment as shown in Figure 9. Obtain DSA trigger from J2-7.
2. Select 2 mA/10 mV scale on the current amplifier, AC coupled.
3. Set up the DSA as shown below:

Select MEAS MODE

Select Time Capture
Select Capture Select
Select Capture Length; Enter 1; Select Record

Select FREQ

Select Freq Span; Enter 100.0; Select Hz
Select E SMPL Off
Select Time Length; Enter 8.0; Select Sec

Select SELECT MEAS

Select Power Spec
Select CH1 Active

Select WINDOW

Select Hann

Select SOURCE

Select Source Off

Select AVG

Select Avg Off
Select Tim Av Off

Select RANGE

Select Aut 1 Rng up

Select INPUT COUPLE

Select CH1 DC
Select CH1 Ground

Select SELECT TRIG

Select Trig Level; Enter 10; Select mV
Select Arm AU
Select Free Run

Select TRIG DELAY

Enter 0.0; Select Sec

Select COORD

Select Real

Select VIEW INPUT

Select Time Buff

Select SCALE

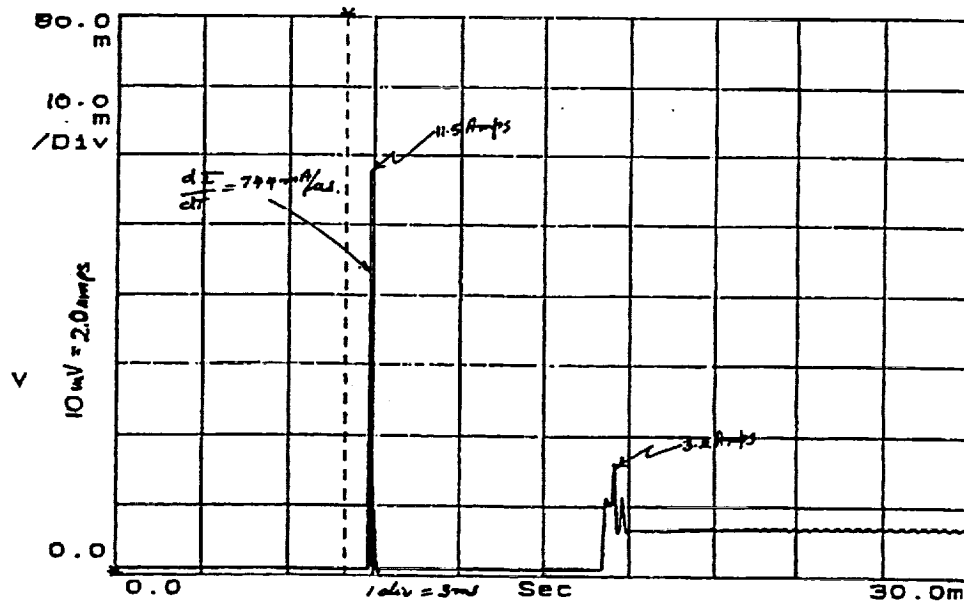
Select X Fixd Scale; Enter 0.0, 8.0
Select Sec
Select Y Fixd Scale; Enter -10.0, 70.0;
Select mV

Select UNITS

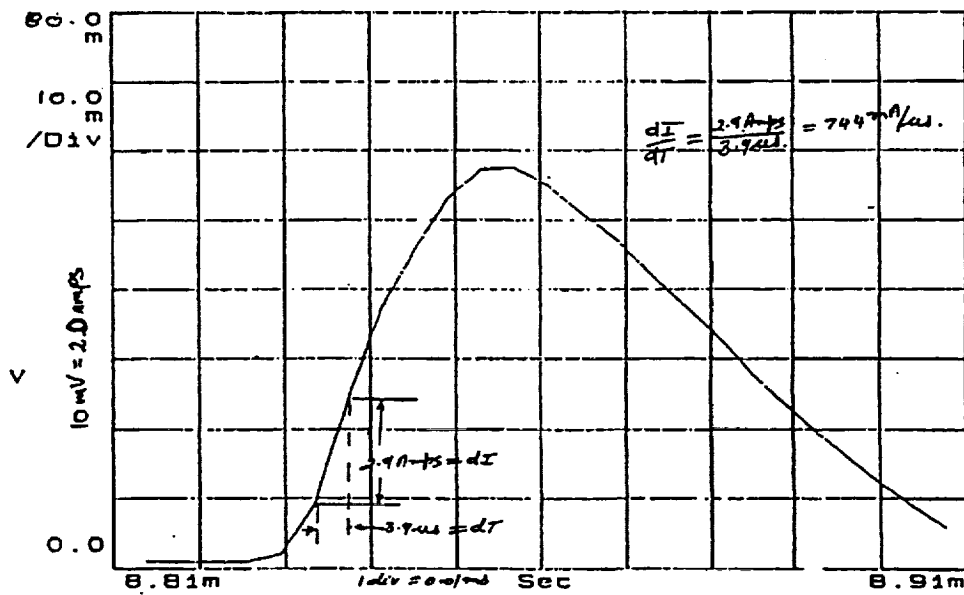
Select Hz (sec)

4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5, except place the instrument in the Warm Cal mode.
5. Acquire 8 seconds of data on the DSA by depressing "Start Capture".
6. Turn OFF the "X" cursor, if it is ON. Turn the "X" cursor ON. The cursor will appear at the highest peak. Make a plot of this display.
7. Select the X-axis scale for 500 ms with the highest peak approximately in the center of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak-to-peak current. Make a plot of this display.

AFTER STABILIZING FOR A MINIMUM OF 20 SCANS, TAKE A FULL PRINT AND ATTACH TO TDS 4.



AMSU-A1 PLB Worst Case Transient



AMSU-A1 PLB $\frac{dI}{dT}$ Worst Case Transient

Figure 11. +28V Pulse Load Bus Turn-on Transient

8. Compute the peak current as follows:

Multiply the delta Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 2 mA/10 mV per division, and the maximum Y value = 276 μ V:

$$0.276 \text{ mV} \times (2 \text{ mA}/10 \text{ mV}) = 0.0552 \text{ mA}$$

Record this value on TDS 52.

3.2.4.2.2.9 Transient susceptibility and power quality tests. The tests that follow will demonstrate the AMSU-A1 instrument will operate within specified parameters when the transients (low and high frequency) are applied directly to the power lines.

3.2.4.2.2.9.1 Equipment setup. Set up the test equipment and connect to the instrument as shown in Figure 12.

3.2.4.2.2.9.2 Low frequency load induced transients. The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the Pulse Load Bus power line at the amplitude and duration specified in Figure 13. Perform the Low Frequency Load Induced Transients as follows:

1. With the exception of the external power supply, turn ON all the test equipment.
2. Place the signal generator in ARB 1 mode. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator to attain the signal characteristics as shown in Figure 13.
3. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
5. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
6. Connect the signal generator to the external power supply. Wait for the instrument to complete three (3) scans. Remove the signal generator output from the power supply.
7. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
8. Record any deviations in the functional performance of the AMSU instrument on TDS 51.

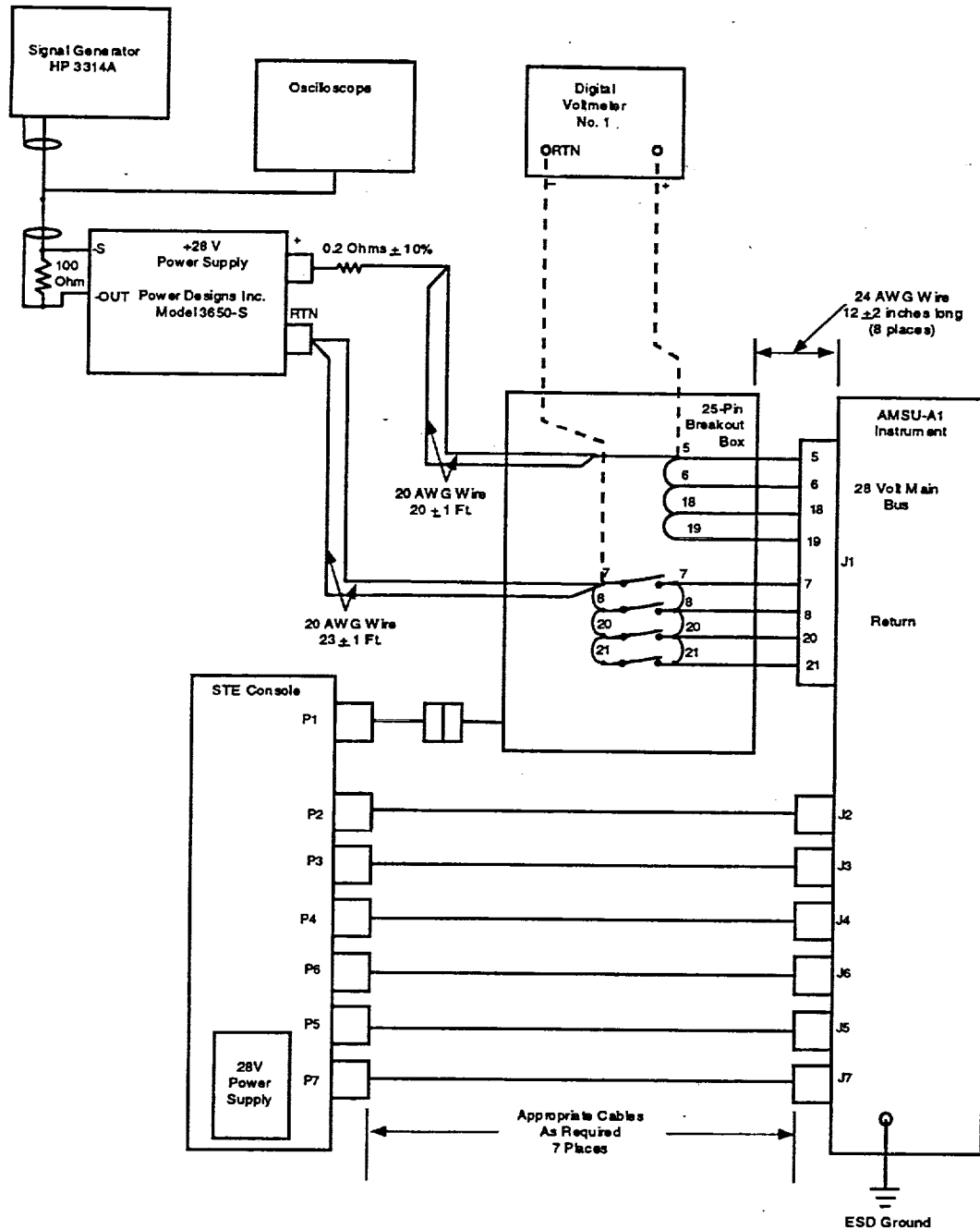


Figure 12. +28V PLB Transient Susceptibility and Power Quality Tests Setup

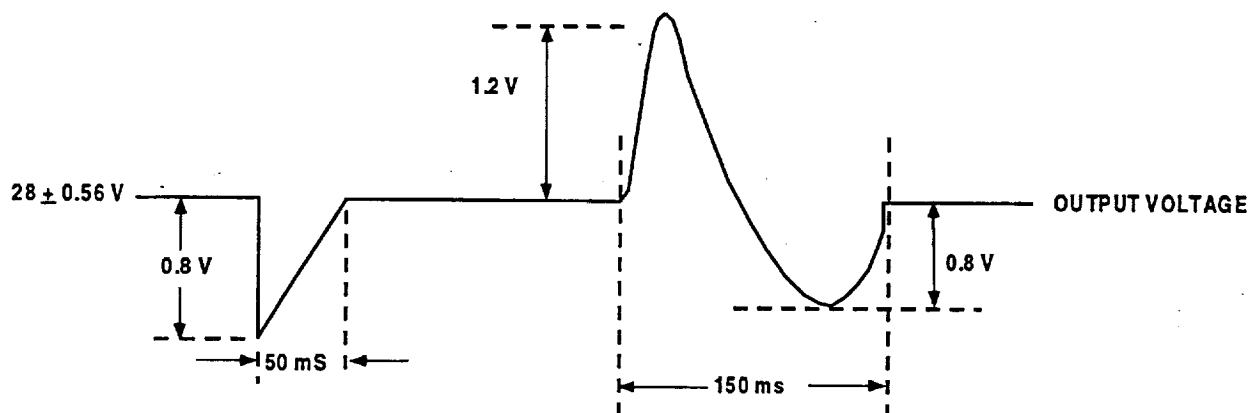


Figure 13. Load Induced Transient (Pulse Load)

3.2.4.2.2.9.3 High frequency load induced transients. The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the power line. The interfering frequencies are simulated by using the triangular wave output of the signal generator. There are three signals to be sequentially injected; the frequencies and amplitudes as produced by the signal generator and measured by the oscilloscope are:

Frequency (Hz)	Amplitude
1.43	200 mVpp
2.86	1.00 Vpp
6.67	1.50 Vpp

Tolerance on the above values is $\pm 10\%$.

Perform the High Frequency Load Induced Transients as follows:

1. With the exception of the external power supply, turn ON all the test equipment.
2. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator output as follows:

amplitude	200 mVpp
offset	0.000 V
frequency	1.430 Hz
3. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
5. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
6. Connect the signal generator to the external power supply. Wait for the instrument to complete three (3) scans. Remove the signal generator output from the power supply.
7. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
8. Repeat steps 2-4 and 6-7 for 2.86 Hz and 1.0 Vpp.
9. Repeat steps 2-4 and 6-7 for 6.67 Hz and 1.5 Vpp.

10. Record any deviations in the functional performance of the AMSU instrument on TDS 51.

3.2.4.2.3 Analog telemetry bus

3.2.4.2.3.1 Operating power measurements. The purpose of this test is to calculate the operating power of the Analog Telemetry Bus from measurements taken of the bus voltage and current.

1. Configure the instrument as shown in Figure 14.
2. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
3. Measure the bus current and record on TDS 5.
4. From the measurements recorded on TDS 5, calculate the operating power for the telemetry bus and record on TDS 5.

3.2.4.2.3.2 Instrument feedback test (ATB). The instrument feedback test contained in the following paragraphs will be performed on the Analog Telemetry Bus power line. The peak-to-peak ripple current shall not exceed 0.29 mA.

3.2.4.2.3.2.1 28 Vdc analog telemetry bus ripple current measurement

1. Connect the instrument and test equipment as shown in Figure 15. Select 2 mA/10 mV scale on the current amplifier, AC coupled.
2. Set up the DSA as follows:

Select MEAS MODE	Select INPUT COUPLE
Select <i>Time Capture</i>	Select <i>CHI DC</i>
Select <i>Capture Select</i>	Select <i>CHI Ground</i>
Select <i>Capture Length</i> ; Enter 1; Select <i>Record</i>	Select SELECT TRIG
Select FREQ	Select <i>Trig Level</i> ; Enter 10; Select <i>mV</i>
Select <i>Freq Span</i> ; Enter 100.0; Select <i>Hz</i>	Select <i>Arm AU</i>
Select <i>E SMPL Off</i>	Select <i>Free Run</i>
Select <i>Time Length</i> ; Enter 8.0; Select <i>Sec</i>	Select TRIG DELAY
Select SELECT MEAS	Enter 0.0; Select <i>Sec</i>
Select <i>Power Spec</i>	Select COORD
Select <i>CHI Active</i>	Select <i>Real</i>
Select WINDOW	Select VIEW INPUT
Select <i>Hann</i>	Select <i>Time Buff</i>
Select SOURCE	Select SCALE
Select <i>Source Off</i>	Select <i>X Fixd Scale</i> ; Enter 0.0, 8.0
Select AVG	Select <i>Sec</i>
Select <i>Avg Off</i>	Select <i>Y Fixd Scale</i> ; Enter -1.0, 7.0;
Select <i>Tim Av Off</i>	Select <i>mV</i>
Select RANGE	Select UNITS
Select <i>Aut 1 Rng up</i>	Select <i>Hz (sec)</i>

3. Ensure that the instrument is OFF (MODULE POWER = DISCONNECT).
4. Acquire 8 seconds of data by depressing "Start Capture".
5. Turn OFF the "X" cursor, if it is ON. Turn the "X" cursor back ON. The cursor will appear at the highest peak. Make a plot of this display.

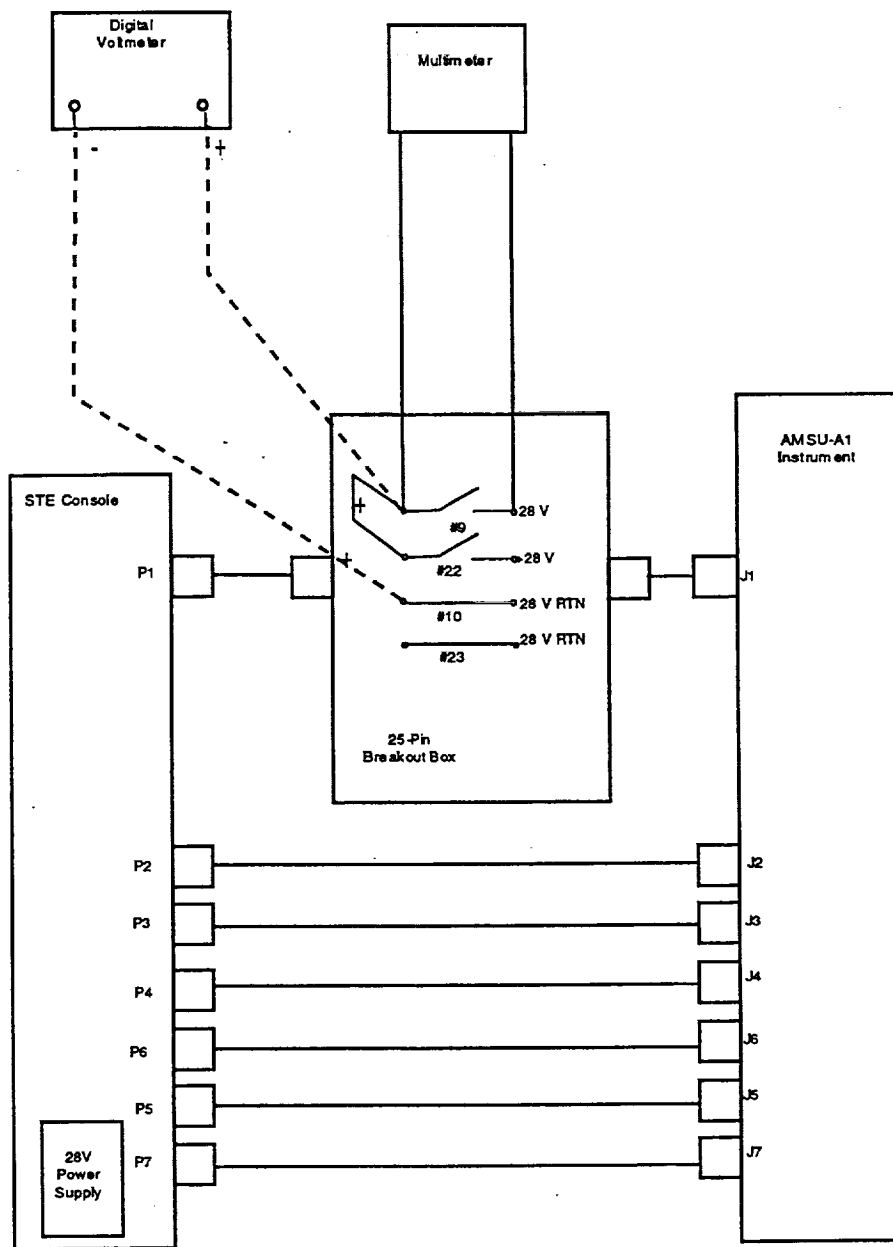


Figure 14. +28V Analog Telemetry Bus Test Setup

6. Select the X-axis scale for 500 ms with the highest peak approximately in the center of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak-to-peak current. Make a plot of this display.
7. Compute the peak-to-peak current as follows:
Multiply the delta Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 2 mA/10 mV per division, and the delta Y value = 276 μ V:

$$0.276 \text{ mV} \times (2 \text{ mA}/10 \text{ mV}) = 0.0552 \text{ mA}$$

Record this value on TDS 52.

3.2.4.2.3.3 Transient susceptibility and power quality tests (ATB). The tests that follow will demonstrate the AMSU-A1 instrument will operate within specified parameters when the transients (low and high frequency) are applied directly to the power lines

3.2.4.2.3.3.1 Equipment setup. Set up the test equipment and connect to the instrument as shown in Figure 15 (exceptions: remove the current probe and amplifier; connect the oscilloscope to monitor output of the signal generator).

3.2.4.2.3.3.2 Low frequency load induced transients. The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the power line at the amplitude and duration specified in Figure 16. Perform the Low Frequency Load Induced Transients as follows:

- 1 With the exception of the external power supply, turn ON all the test equipment.
- 2 Place the signal generator in ARB 0 mode. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator to attain the signal characteristics as shown in Figure 16.
- 3 Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
- 4 Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
- 5 Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
- 6 Connect the signal generator to the external power supply. Wait for the instrument to complete three (3) scans. Remove the signal generator output from the power supply.
- 7 Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22. Attach printouts to TDS 51.
- 8 Record any deviations in the functional performance of the AMSU instrument on TDS 51.

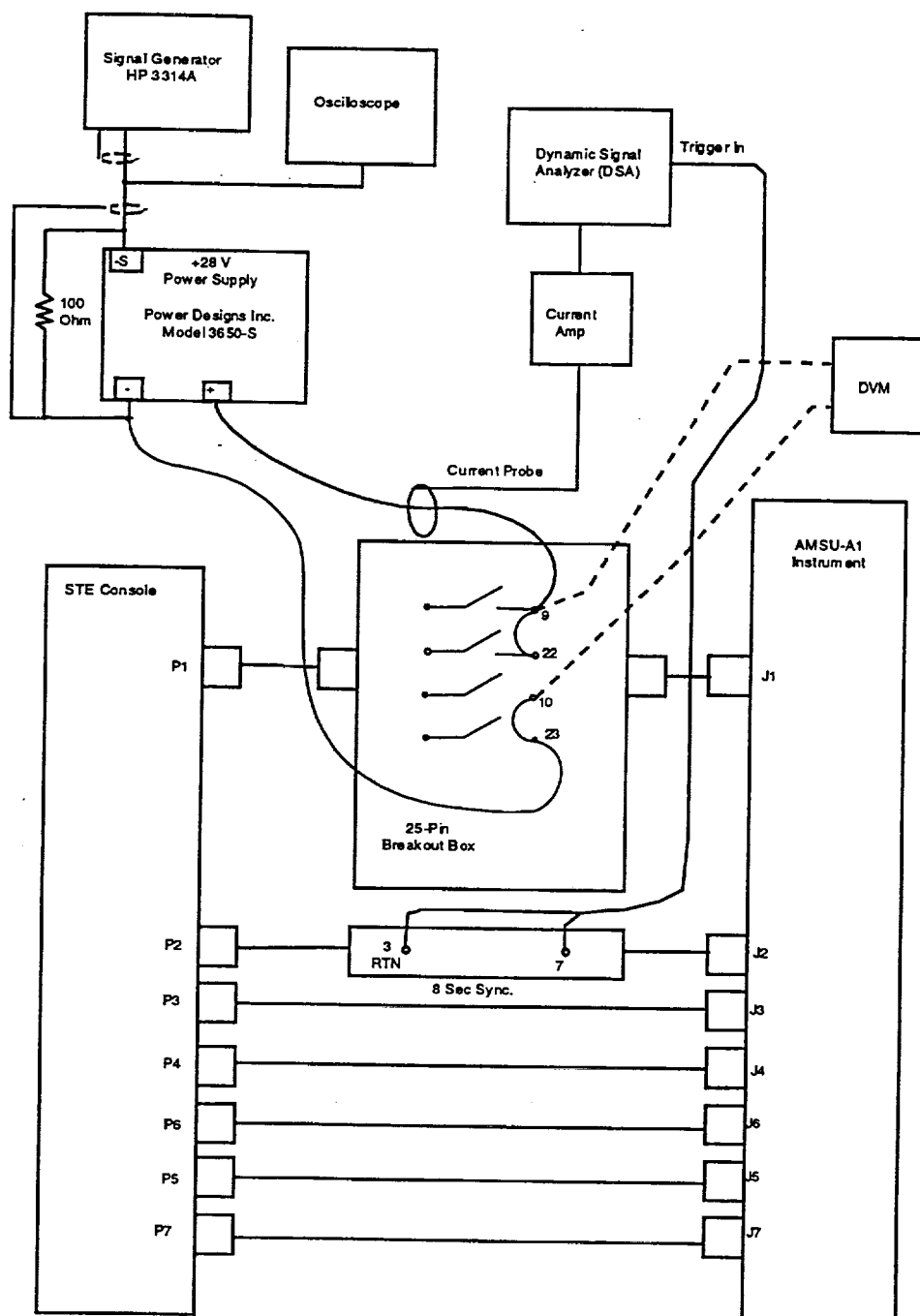
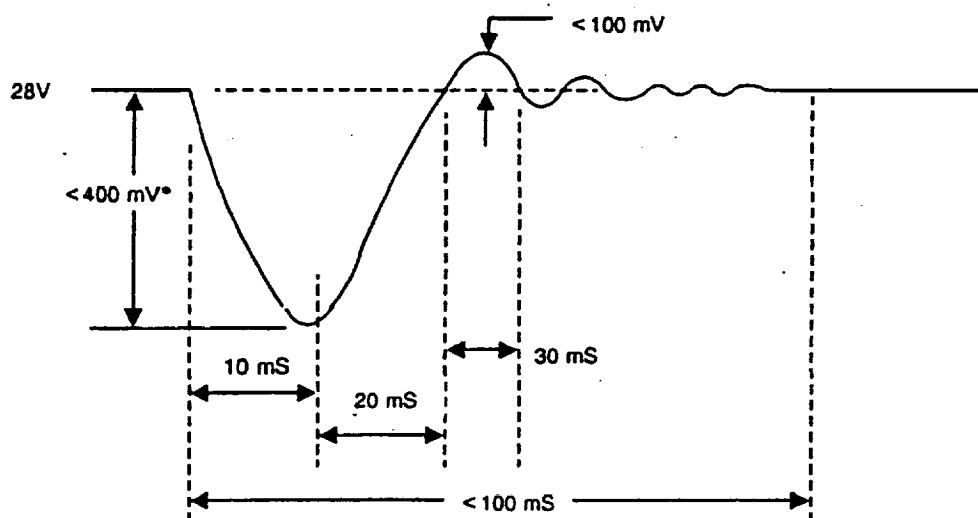


Figure 15. +28 Vdc Analog Telemetry Bus Ripple Current and Transient Susceptibility Test Setup



* Typical transients occurring a number of times per orbit are on the order of 200 mV zero-to-peak for a 1.5A load change.

Figure 16. Load Induced Transient (Main Bus)

3.2.4.2.3.3.3 High frequency load induced transients. The AMSU instrument shall be capable of normal operation before and after positive and negative transients are injected into the power line. The interfering frequencies are simulated by using the triangular wave output of the signal generator. There are three signals to be sequentially injected; the frequencies and amplitudes as produced by the signal generator and measured by the oscilloscope are:

Frequency (Hz)	Amplitude
1.43	200 mVpp
2.86	1.00 Vpp
6.67	1.50 Vpp

Tolerance on above values is $\pm 10\%$.

Perform the High Frequency Load Induced Transients as follows:

1. With the exception of the external power supply, turn ON all the test equipment.
2. With the external power supply OFF, while monitoring the oscilloscope, adjust the amplitude and frequency output of the signal generator output as follows:

..... amplitude	200 mVpp
offset	0.000 V
frequency	1.430 Hz
3. Remove the signal generator output connection from the power supply. While monitoring the external power supply dc voltage with the meter, turn the external power supply ON.
4. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
5. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
6. Connect the signal generator to the external power supply. Wait for the instrument to complete three (3) scans. Remove the signal generator output from the power supply.

7. Acquire one (1) Full Scan Mode printout; verify the printout meets the requirements of TDS 19 thru 22.
8. Repeat steps 2-4 and 6-7 for 2.86 Hz and 1.0 Vpp.
9. Repeat steps 2-4 and 6-7 for 6.67 Hz and 1.5 Vpp.
10. Record any deviations in the functional performance of the AMSU instrument on TDS 51.

3.2.4.2.4 +10 volt interface bus test

3.2.4.2.4.1 Operating power measurements. The purpose of this test is to calculate the operating power of the +10 Vdc Interface Bus from measurements taken of the bus voltage and current.

1. Configure the instrument as shown in Figure 17.
2. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
3. Measure the bus current and record on TDS 6.
4. From the measurements recorded on TDS 6, calculate the operating power for the telemetry bus and record on TDS 6.

3.2.4.2.4.2 Instrument feedback test. The instrument feedback test contained in the following paragraphs will be performed on the +10 Vdc Interface Bus power line. The peak-to-peak ripple current shall not exceed 1 mA; in addition, the frequency of the ripple shall not exceed 2.5 MHz.

3.2.4.2.4.2.1 +10 volt interface bus ripple current measurement

1. Connect the instrument and test equipment as shown in Figure 17. Select 2 mA/10 mV scale on the current amplifier, AC coupled.
2. Set up the DSA as shown below:

Select MEAS MODE	Select INPUT COUPLE
Select <i>Time Capture</i>	Select <i>CHI DC</i>
Select <i>Capture Select</i>	Select <i>CHI Ground</i>
Select <i>Capture Length</i> ; Enter 1	Select SELECT TRIG
Select FREQ	Select <i>Trig Level</i> ; Enter 10, Select <i>mV</i>
Select <i>Freq Span</i> ; Enter 100.0; Select <i>Hz</i>	Select <i>Arm AU</i>
Select <i>E SMPL Off</i>	Select <i>Free Run</i>
Select <i>Time Length</i> ; Enter 8.0; Select <i>Sec</i>	Select TRIG DELAY
Select SELECT MEAS	Enter 0.0; Select <i>Sec</i>
Select <i>Power Spec</i>	Select COORD
Select <i>CHI Active</i>	Select <i>Real</i>
Select WINDOW	Select VIEW INPUT
Select <i>Hann</i>	Select <i>Time Buff</i>
Select SOURCE	Select SCALE
Select <i>Source Off</i>	Select <i>X Fixd Scale</i> ; Enter 0.0, 8.0
Select AVG	Select <i>Sec</i>
Select <i>Avg Off</i>	Select <i>Y Fixd Scale</i> ; Enter -1.0, 7.0;
Select <i>Tim Av Off</i>	Select <i>mV</i>
Select RANGE	Select UNITS
Select <i>Aut 1 Rng up</i>	Select <i>Hz (sec)</i>

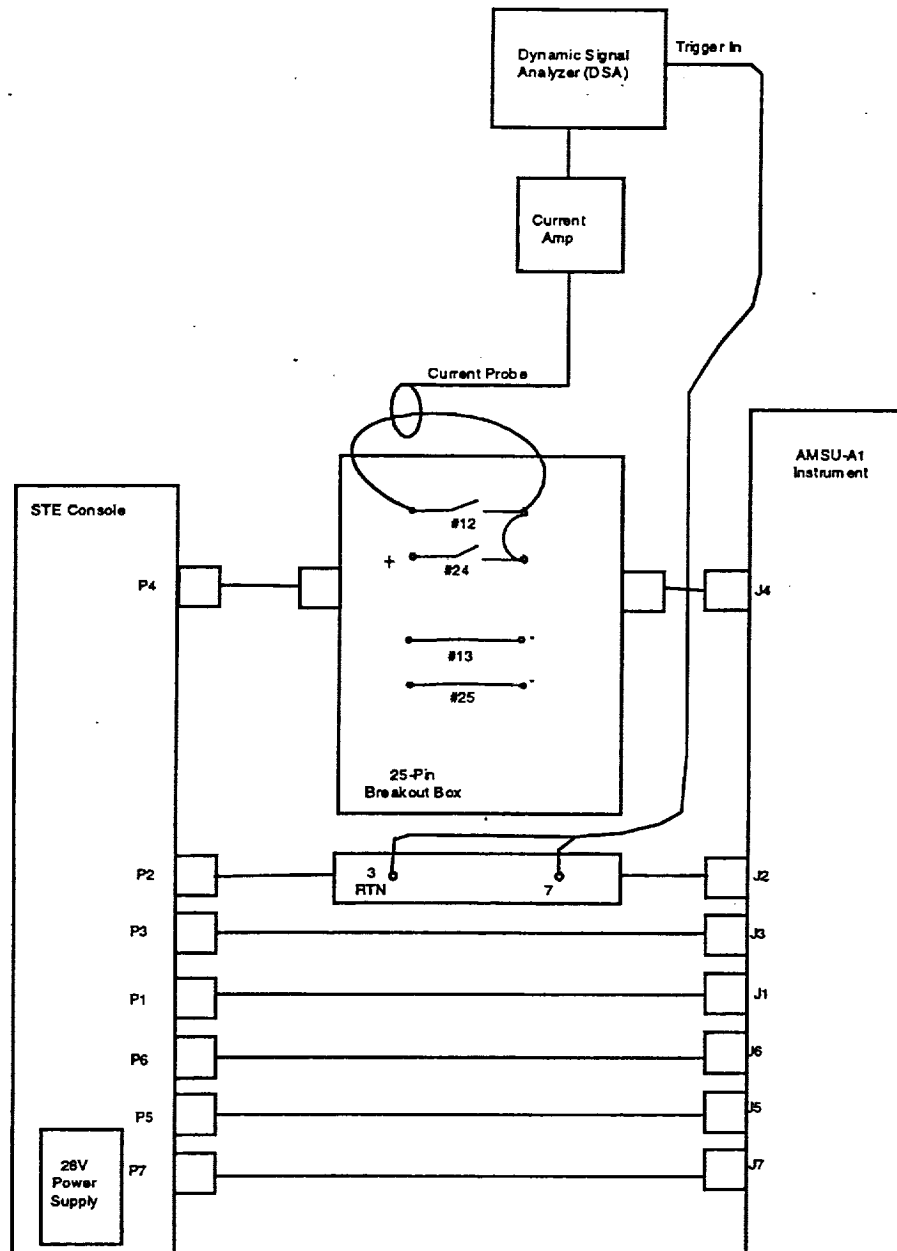


Figure 17. +10V Interface Bus Operating Power and Ripple Current Measurements Test Setup

3. Turn the instrument ON and place the instrument in the modes congruent with paragraph 3.2.3.5.
4. Acquire 8 seconds of data by depressing "Start Capture".
5. Turn OFF the "X" cursor, if it is ON. Turn the "X" cursor back ON. The cursor will appear at the highest peak. Make a plot of this display.
6. Select the X-axis scale for 500 ms with the highest peak approximately in the center of the display. Turn the "Y" cursor ON and bound the limits of the current peaks. The delta Y value on the DSA will be used to calculate the peak-to-peak current. Make a plot of this display.
7. Compute the peak-to-peak current as follows:

Multiply the delta Y value by the current/div as selected on the current amplifier. As an example, if the current amplifier is set up to display 2 mA/10 mV per division, and the delta Y value = 276 μ V:

$$0.276 \text{ mV} \times (2 \text{ mA}/10 \text{ mV}) = 0.0552 \text{ mA}$$

Record this value on TDS 52.

3.2.4.2.5 Power input test for LPT. For LPT, test the power input as follows:

1. Configure the unit and test equipment as indicated in Figure 18.
2. Turn the unit ON as described in 3.2.3.5. Set the STE power supply voltage at 28.00 ± 0.05 Vdc using 25-pin breakout box and DVM #1.

NOTE

Do not proceed without successful completion of step 2.

3. Record the voltage from DVM #1 and current in Amps from STE current meter on TDS 7.

3.2.4.3 Clock, commands, and data system test. This procedure verifies the clock signal, the commands, and the data requirements specified in S-480-80, GHS IS-3267415, and UHS IS-2617547.

3.2.4.3.1 Test sequence. The test sequence shall be as follows:

- a. Clock signals verification
- b. Commands and Digital-B telemetry verification
- c. Data output verification
 - (1) Digital-A
 - (2) Analog telemetry
 - (3) Test points
- d. GSE modes.

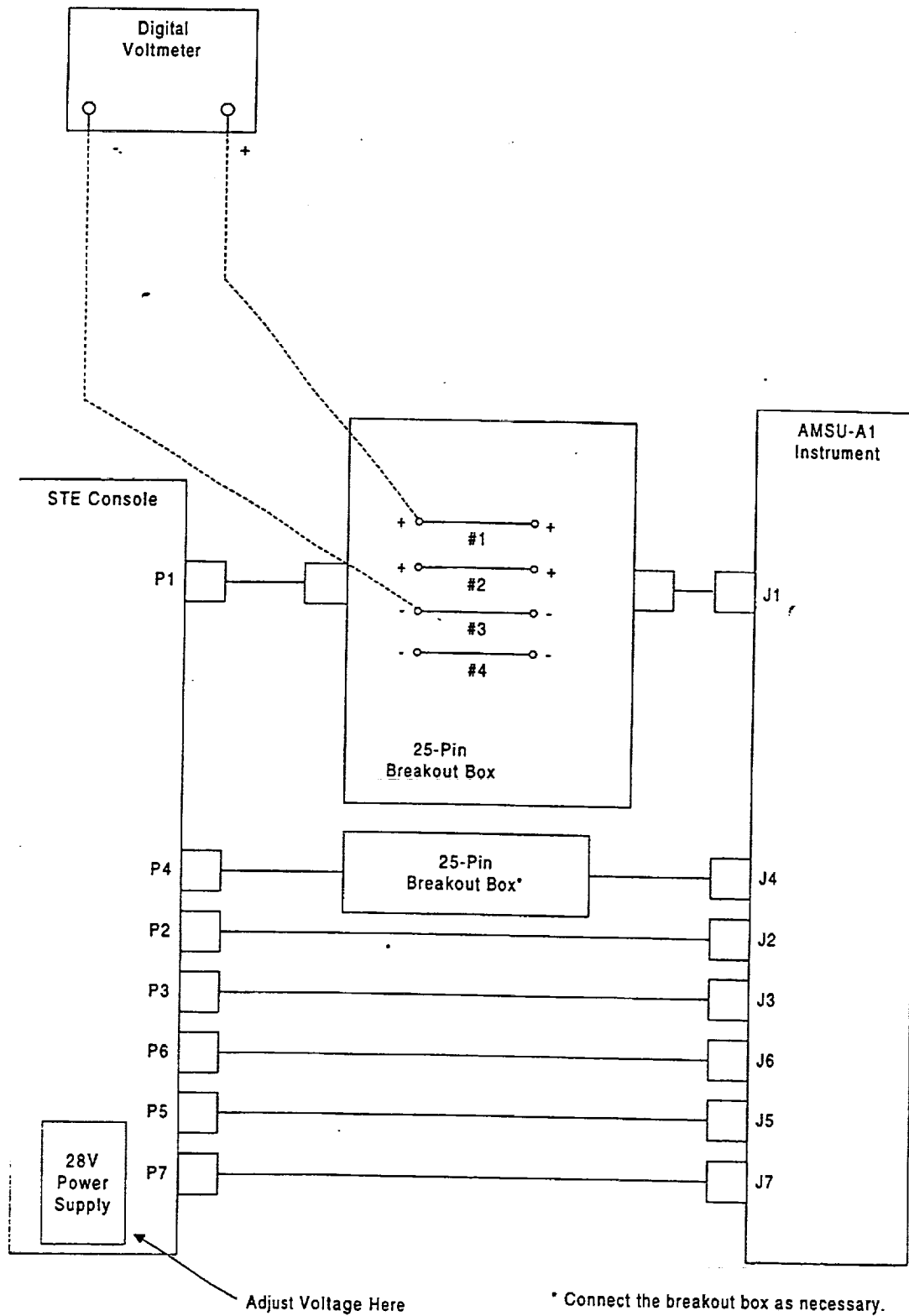


Figure 18. +28 V Main Load Bus Test Setup (For LPT Only)

3.2.4.3.2 Clock signals test. The following items shall be tested to verify the clock signals. Refer to Figure 19 for graphical representation of these pulses.

- a. 1.248 MHz clock
- b. 8 seconds frame pulse
- c. A1 select pulse
- d. C1 shift pulse

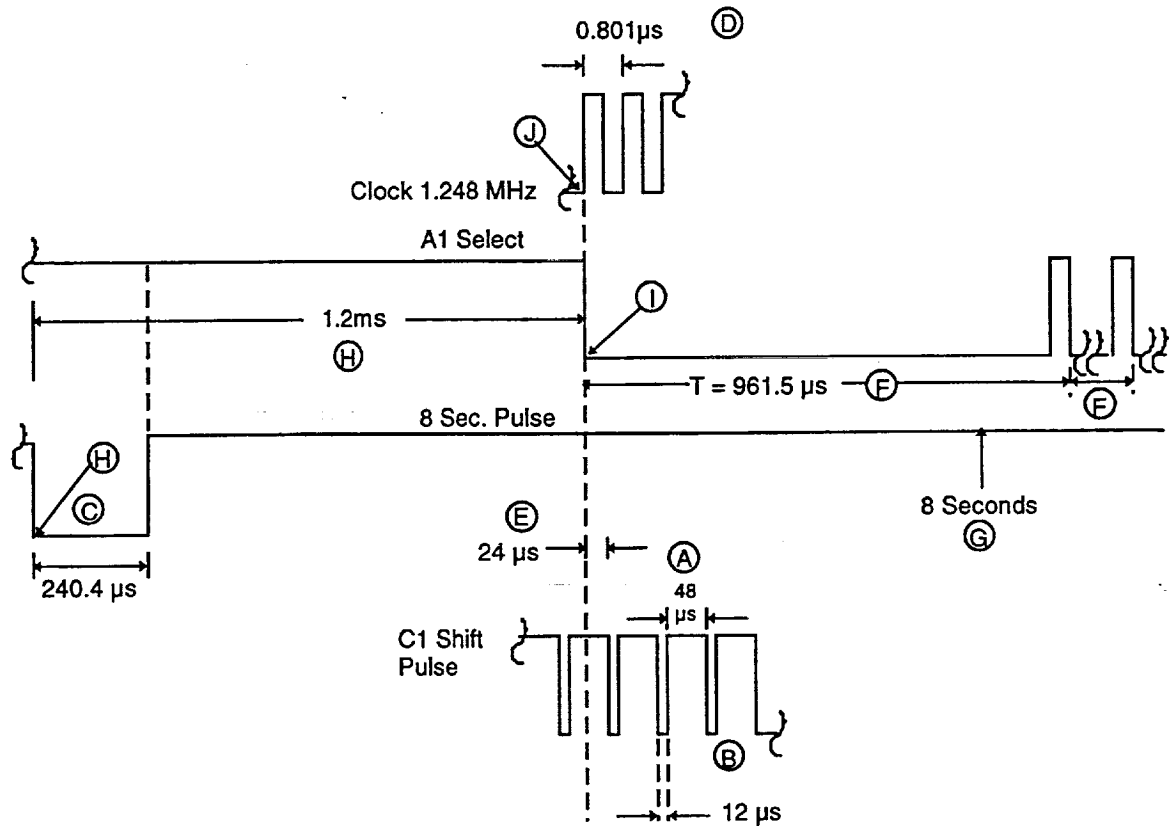


Figure 19. Clock Pulses Timing and Synchronization

3.2.4.3.2.1 1.248 MHz synchronization clock. Perform the following procedures:

1. Configure the unit and the test equipment as indicated in Figure 20.
2. Connect CHANNEL-1 of the oscilloscope to the 1.248 MHz clock signal as shown in Figure 20.
3. Turn the unit ON as described in 3.2.3.5.

NOTE

Do not proceed without successful completion of step 3.

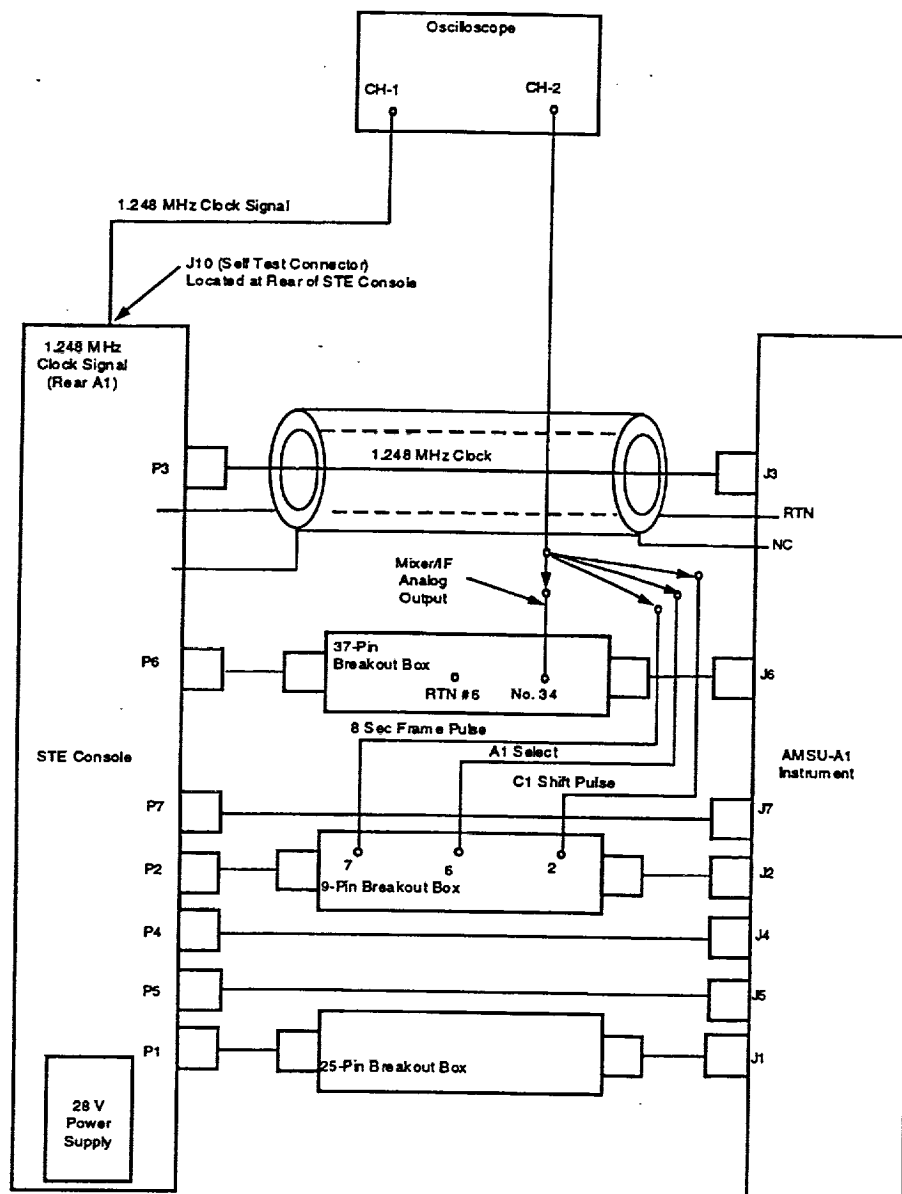


Figure 20. Clock Signals Test Setup

4. Using the oscilloscope, measure the 1.248 MHz clock signal. Record the data and attach the photograph or plot on TDS 8.

3.2.4.3.2.2 C1 shift pulse verification. Connect CHANNEL-2 of the oscilloscope to Pin 2 of the 9-pin breakout box (P2-J2). Photograph or plot the oscilloscope display and record the information indicated on TDS 9.

3.2.4.3.2.3 A1 select pulse verification. Connect CHANNEL-2 of the oscilloscope to Pin 6 of the 9-pin breakout box (P2-J2). Photograph or plot the oscilloscope display and record the information indicated on TDS 10.

3.2.4.3.2.4 8-seconds frame sync pulse verification

1. Connect CHANNEL-2 of the oscilloscope to Pin 7 of the 9-pin breakout box (P2-J2). Photograph or plot the oscilloscope display and record the information indicated on TDS 11. (Record of "C" timing only, is required.)
2. Turn the unit OFF by executing the softkey command [11] MODULE TOTALLY OFF to OFF. Leave both breakout boxes in place.

3.2.4.3.2.5 Synchronization signal relationship. The following synchronization signal relationship shall be verified.

- a. A1 select pulse and the 8-second frame sync pulse
 1. With the unit off, configure the unit and the test equipment as indicated in Figure 21.
 2. Connect CHANNEL-1 of the oscilloscope to the breakout box, Pin 6 (A1).
 3. Adjust the amplitude and the trigger level of the oscilloscope for best picture.
 4. Photograph or plot the oscilloscope display and attach the photograph or plot in the space provided on TDS 12.
 5. From the photograph or plot, verify the synchronization as described in TDS 12. Record pass or fail.
- b. A1 select pulse and C1 shift pulse
 1. Connect CHANNEL-2 of the oscilloscope to the breakout box Pin 2 (C1 shift pulse).
 2. Adjust the amplitude and the trigger level of the oscilloscope for best picture.
 3. Photograph or plot the oscilloscope display and attach the photograph or plot in the space provided on TDS 12, sheet 2.
 4. From the photograph or plot, verify the synchronization as described in TDS 12, sheet 2. Record pass or fail.
- c. A1 select pulse and 1.248 MHz clock.
 1. Connect CHANNEL-2 of the oscilloscope to the clock connector located at the rear of the STE.
 2. Adjust the amplitude and the trigger level of the oscilloscope for best picture.
 3. Photograph or plot the oscilloscope display and attach the photograph or plot in the space provided on TDS 13.

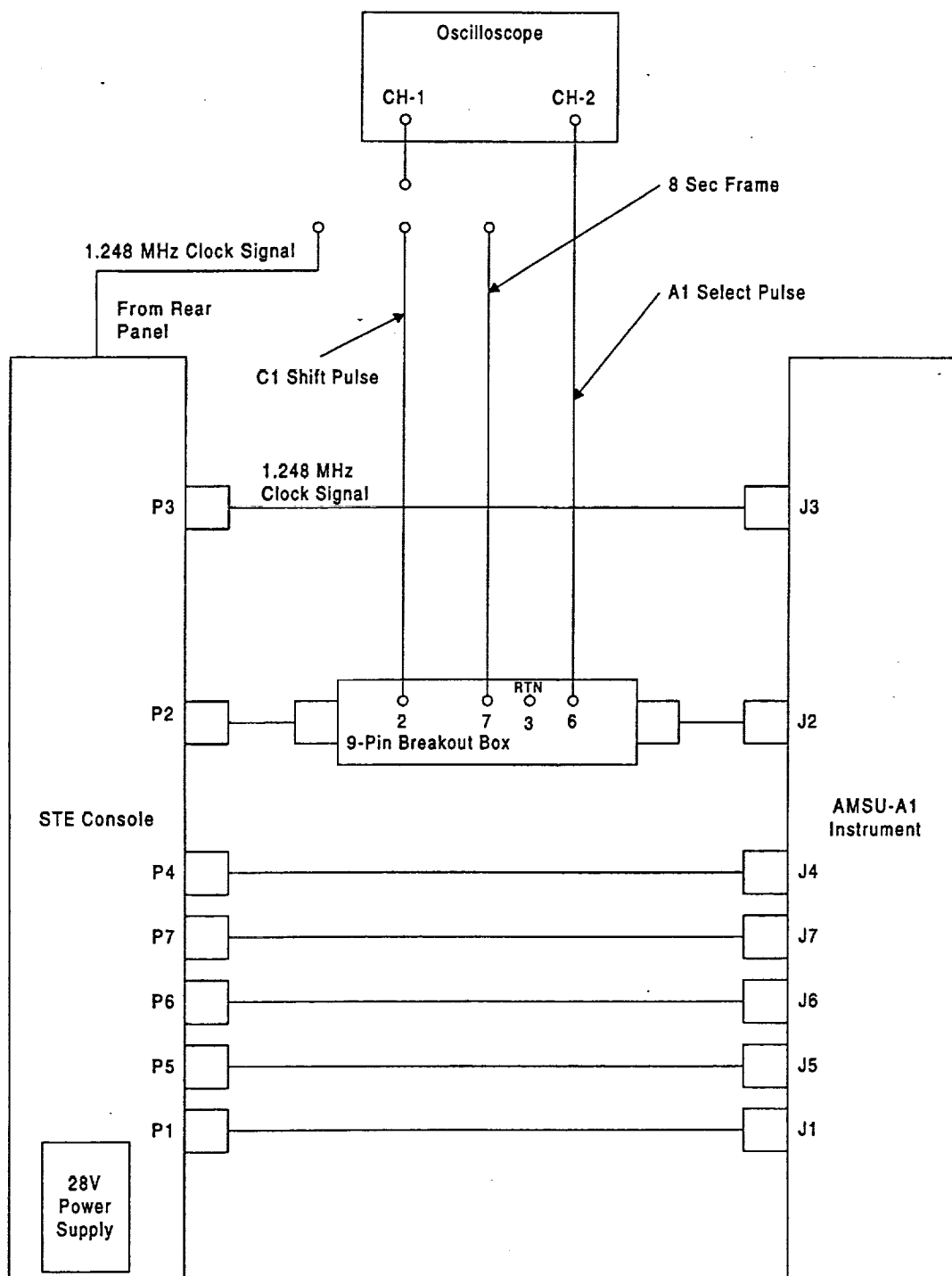


Figure 21. Synchronization Signal Relationships Test Setup

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4. From the photograph or plot, verify the synchronization as described in TDS 13. Record pass or fail.

3.2.4.3.3 Commands and digital-B telemetry test. Commands and digital-B telemetry shall be verified in accordance with the following paragraphs.

3.2.4.3.3.1 Module totally off. Commands and digital-B telemetry, with the module totally off, shall be tested as follows:

1. Turn the unit on as follows:
 - a. Press [12] POWER ON (from 1st screen).
 - b. Press [2] MONITOR ONLY (from 1st screen)
 - c. Press [14] COMMANDS (from 2nd screen)

Verify the screen displays the default parameters below.

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	YES	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

2. From the Commands Menu, execute command [11] MODULE TOTALLY OFF to OFF mode.
3. Wait at least 18 seconds, then verify that the following events are in effect:
 - a. [11] MODULE TOTALLY OFF = OFF
 - b. [12] SCANNER A1-1 POWER = OFF.
 - c. [13] SCANNER A1-2 POWER = OFF.
 - d. [10] SURVIVAL HEATER POWER = OFF

Antenna reflectors for A1-1 and A1-2 pointing toward the warm load.

4. Record the above observations on TDS 14.

3.2.4.3.3.2 Survival heater power ON/OFF command. The survival heater power ON/OFF command shall be tested as follows:

1. Execute command [10] SURVIVAL HEATER POWER to ON mode. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 14.
2. Execute command [10] SURVIVAL HEATER to OFF mode. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 14.

3.2.4.3.3.3 Module power connect command. The module power connect command shall be tested as follows:

1. Execute command [9] MODULE POWER to CONNECT mode. Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 14.
2. Verify that the current at the STE power supply is 0.5 to 4.3 Amperes. Record this information on TDS 14.

3.2.4.3.3.4 Phase lock loop (PLL) PLLO No. 1 / PLLO No. 2. The PLL PLLO No. 1/PLLO No. 2 command shall be tested as follows:

1. Execute [18] PLL POWER = PLLO#2
Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 14.
2. Execute [18] PLL POWER = PLLO#1
Wait at least 18 seconds. Verify that the command is in effect. Record observation on TDS 14.

3.2.4.3.3.5 Scanner commands verification. The scanner commands shall be tested as follows:

1. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

Wait at least 18 seconds. Verify that the commands are in effect. Record observations on TDS 15.

2. Execute. [12] SCANNER A1-1 POWER = OFF
[13] SCANNER A1-2 POWER = OFF

Wait at least 18 seconds. Verify that the commands are in effect. Record observations on TDS 16.

3. Execute. [12] SCANNER A1-1 POWER = ON
[13] SCANNER A1-2 POWER = ON

Wait at least 18 seconds. Verify that the commands are in effect. Record observations on TDS 17.

3.2.4.3.3.6 Scanner position commands (A1-1 and A1-2) verification. Verify scanner position command operation as follows:

NOTE

Verification of the scan position is applicable to both antenna reflectors located at the high and low bays of the instrument (A1-1 and A1-2).

1. Execute: [14] ANTENNA WARM CAL POS = YES
[17] ANTENNA FULL SCAN MODE = NO

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

2. Execute: [15] ANTENNA IN COLD CAL POS = YES
 [14] ANTENNA WARM CAL POS = NO

Execute: [19] COLD CAL POS MSB = zero
 [20] COLD CAL POS LSB = one

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

3. Execute: [19] COLD CAL POSITION MSB = ONE
 [20] COLD CAL POSITION LSB = ZERO

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

4. Execute: [19] COLD CAL POSITION MSB= ONE
 [20] COLD CAL POSITION LSB= ONE

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

5. Execute: [19] COLD CAL POSITION MSB= ZERO
 [20] COLD CAL POSITION LSB= ZERO

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

6. Execute: [16] ANTENNA IN NADIR POSITION = YES
 [15] ANTENNA IN COLD CAL POS = NO

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

7. Execute: [14] ANTENNA WARM CAL POS = YES

Wait at least 18 seconds. Verify that the commands are in effect. Record observation on TDS 18.

3.2.4.3.4 Digital-A data output verification. The following items shall be tested to verify the digital-A data output:

- a. Full scan (3.2.4.3.4.1)
- b. Warm load (3.2.4.3.4.2)
- c. Cold cal (3.2.4.3.4.3)
- d. Nadir (3.2.4.3.4.4).

For each of the above scan modes, the following parameters will be subject to pass/fail criterion:

- [I] Sync. sequence
- [II] Unit I.D. and serial number
- [III] Digital-B serial data verification
- [IV] Reflector positions

[V] Radiometric data (scene data)

Radiometric data shall be obtained from two channels only, Channels 9 and 3. Channel 9 is physically located at the high bay of the sensor (A1-1 location) and Channel 3 is located at the lower bay of the sensor (A1-2 location).

[VI] Temperature sensors.

For the cold cal mode, reflector position [IV], verify the following:

- (a) Cold cal position with MSB=1 and LSB=0
- (b) Cold cal position with MSB=0 and LSB=1
- (c) Cold cal position with MSB=1 and LSB=1.

NOTE

The calibration data for the selected AMSU-A1 sensor serial number is required prior to the start of this test. Refer to 3.2.4.3.4.1.

3.2.4.3.4.1 *Full scan mode.* The digital-A data output in full-scan mode shall be tested as follows:

1. Turn the unit on. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

2. Obtain a full printout (9 pages) of all the parameters ([I] through [VI]) described above, by touching the PRINT [3] FULL touch area. The computer will start printing all 9 pages of data.
3. Label 1st page of 9 pages with the unit serial number and the paragraph number corresponding to this test.

(I), (II), and (III) Sync, Unit ID, and Digital-B Data

4. Using Page 1 of the printout, verify that elements 0001 through 0008 are within the required values specified in TDS 19. Record pass or fail.

[IV] Reflector position

NOTE

To verify the following steps, the operator may print out the individual parameters by using AE-26157 and attach the data to each TDS.

5. Using the individual printout, verify that there is no "E" ERROR Flag (for S/N 102 through 104) on the computer printout. Record pass or fail on TDS 20. For S/N 105 and up, verify that position values are within ± 10 counts from requirement provided in TDS 6, AE-26002/1.

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[V] Radiometric data

6. Using the individual printout, verify that the data are within the values specified on TDS 21. Record pass or fail.

[VI] Temperature sensors

7. Using the individual printout, verify that elements 1090 through 1180 are within the values specified on TDS 22 (sheets 1 and 2). Record pass or fail.

3.2.4.3.4.2 Warm cal mode. The digital-A data output, in warm-cal mode shall be tested as follows:

1. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	YES	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

[I], [II], and [III] Sync, Unit ID, and Digital-B Data

2. Using Page 1 of the printout, verify that elements 0001 through 0008 are within the required values specified in TDS 23. Record pass or fail.

NOTE

To verify the following steps, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS.

[IV] Reflector position

3. Using the individual printout, verify that there is no "E" ERROR Flag (for S/N 102 through 104) on the computer printout. Record pass or fail on TDS 24. For S/N 105 and up, verify that position values are within ± 10 counts from requirement provided in TDS 6, AE-26002/1.

[V] Radiometric data

4. Using the individual printout, verify that the data are within the values specified on TDS 25. Record pass or fail.

[VI] Temperature sensors

5. Using the individual printout, verify that elements 1090 through 1180 are within the values specified on TDS 26 (sheets 1 and 2). Record pass or fail.

3.2.4.3.4.3 Cold cal mode. The digital-A data output, in cold-cal mode, shall be tested as follows:

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1. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	YES [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

II, III and IIII Sync, Unit ID, and Digital "B" data

2. Using Page 1 of the printout, verify that elements 0001 through 0008 are within the required values specified in TDS 27. Record pass or fail.

NOTE

To verify the following steps, the operator may print out the individual parameters by using AE-26157 and attach the data to each TDS.

IV Reflector position

3. Using the individual printout, verify that there is no "E" ERROR Flag (for S/N 102 through 104) on the computer printout for steps 4a, 4b, 4c, and 4d. For S/N 105 and up, verify that position values are within ± 10 counts from requirement provided in TDS 6, AE-26002/1.
4. To test the cold cal reflector position, perform the following substeps:
 - a. Using AE-26157; select reflector position screen, execute PRINT [2] SCREEN ONLY, and attach the data to TDS 28. Verify that there is no "E" ERROR Flag (for S/N 102 through 104) on the computer printout. Record pass or fail on TDS 28. For S/N 105 and up, verify that position values are within ± 10 counts from requirement provided in TDS 6, AE-26002/1.
 - b. Execute commands [19] COLD CAL POSITION MSB to 0 and [20] COLD CAL POSITION LSB to 1. Repeat substep a. then proceed to substep c.
 - c. Execute commands [19] COLD CAL POSITION MSB to 1 and [20] COLD CAL POSITION LSB to 0. Repeat substep a., then proceed to substep d.
 - d. Execute commands [19] COLD CAL POSITION MSB to 1 and [20] COLD CAL POSITION LSB to 1. Repeat substep a., then proceed to substep e.
 - e. Execute commands [19] COLD CAL POSITION MSB to 0 and [20] COLD CAL POSITION LSB to 0.

IV Radiometric data

5. Using the individual printout, verify that the data are within the values specified on TDS 29. Record pass or fail.

[VI] Temperature sensors

6. Using the individual printout, verify that elements 1090 through 1180 are within the values specified on TDS 30 (sheets 1 and 2). Record pass or fail.

3.2.4.3.4.4 Nadir cal mode. The digital-A data output, in nadir-cal mode, shall be tested as follows:

1. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	YES [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

[I], [III] and [III] Sync, Unit ID, and Digital "B" data

2. Using the individual printout, verify that elements 0001 through 0008 are within the required values specified in TDS 31. Record pass or fail.

NOTE

To verify the following steps, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS.

[IV] Reflector position

3. Using the individual printout, verify that there is no "E" ERROR Flag (for S/N 102 through 104) on the computer printout. Record pass or fail on TDS 24. For S/N 105 and up, verify that position values are within ± 10 counts from requirement provided in TDS 6, AE-26002/1

[V] Radiometric data

4. Using the individual printout, verify that the data are within the values specified on TDS 32. Record pass or fail.

[VI] Temperature sensors

5. Using the individual printout, verify that the elements 1090 through 1180 are within the values specified on TDS 33 (sheets 1 and 2). Record pass or fail.

3.2.4.3.5 Analog telemetry test. The purpose of this test is to verify that the 26 analog telemetry signals are within requirements. The purpose of the analog telemetry signals is to provide information about the functionality of the subsystems during normal operation of the unit. The analog telemetry signals shall be verified in two ways: (1) by measuring the analog telemetry signals directly at the interfacing connector and (2) by use of the STE.

3.2.4.3.5.1 Analog TLM signals measurements connector J6. Measure analog TLM signals at connector J6 as follows:

1. Configure the unit and the STE as indicated in Figure 22. Verify that unit power is off prior to the installation of the breakout boxes. To turn the unit off, select the Commands Menu and execute command [9] MODULE POWER = DISCONNECT and POWER [4] OFF. Manually turn off the STE 28 V power supply located inside the STE console.
2. Turn the unit on as follows:
 - (a) Turn on the STE 28 V power supply.
 - (b) On the Commands Menu, execute: POWER [4] ON and [9] MODULE POWER = CONNECT. Verify the display is as follows.

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	YES [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

3. Using the "28 V Analog Telemetry Bus Return" (J1-10) as a reference ground, measure and record the six temperature sensor voltages in the order specified on TDS 34.
4. Using the "Signal Ground" (J2-03) as a reference ground, measure and record the remaining analog telemetry voltage levels in the order specified on TDS 34.
5. Leave the unit on in preparation for the next test.

3.2.4.3.5.2 Analog TLM signal measurements using the STE. Analog TLM signal measurements using the STE shall be taken as follows:

1. Using the individual printout, verify that the data matches the values specified on TDS 35. Record pass or fail.
2. Attach computer individual printout to TDS 35.

3.2.4.3.6 Test point verification. The purpose of this test is to verify the performance of the integrator and its associated clock pulses. Figure 2 shows the integration waveform and the clock signals. Test point verification consists of the following parameters:

- a. Integration/Hold and Dump Clock Signals. (3.2.4.3.6.1) (Time and amplitude)
- b. Integration Time (Analog Output). (3.2.4.3.6.2) (Time and amplitude for all 13 channels.)

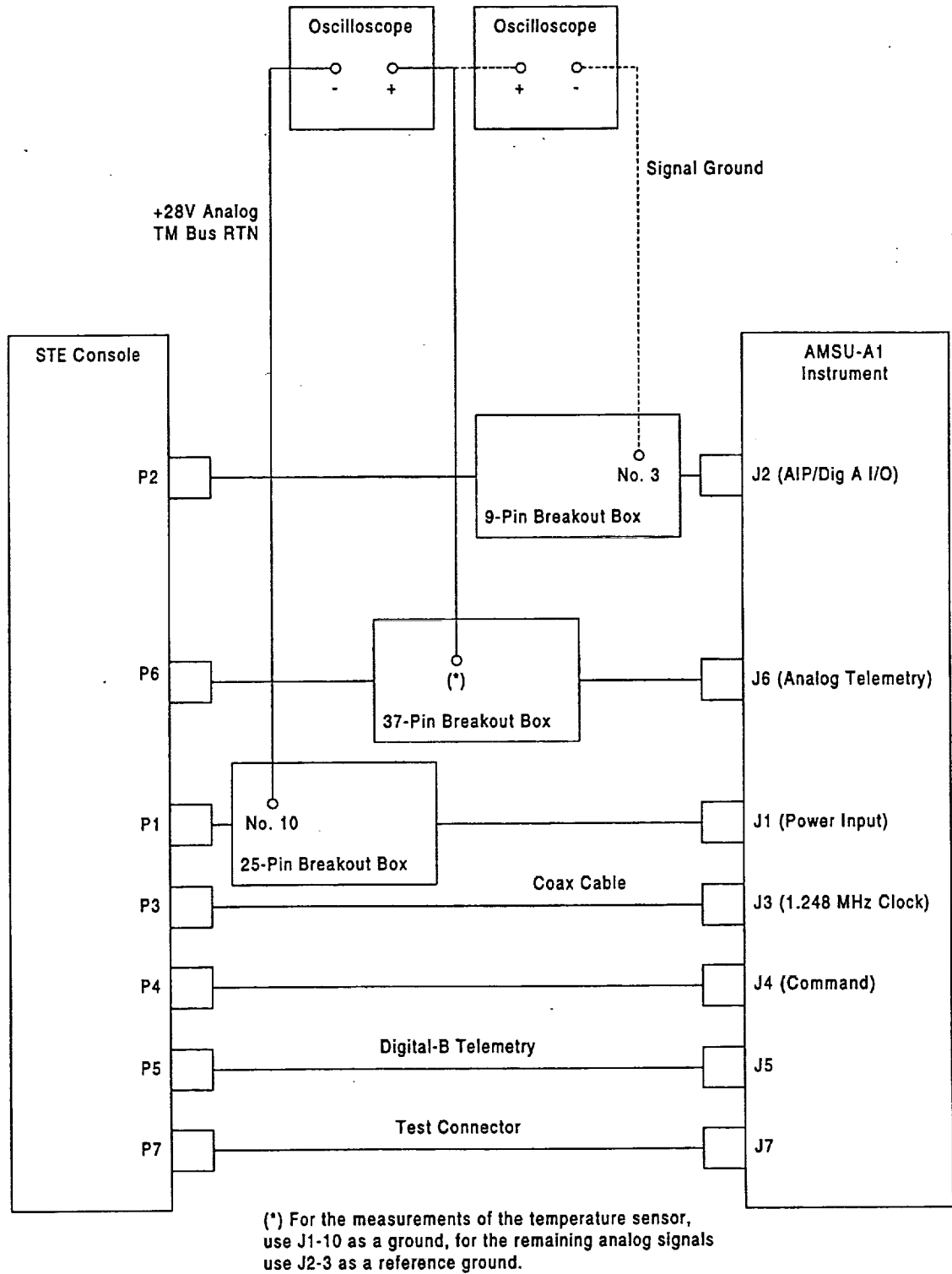


Figure 22. Analog Telemetry Signal Verification Test Setup

3.2.4.3.6.1 Integration/hold and dump clock signals. The integration/hold and dump clock signals shall be tested as follows:

1. Referring to Figure 23, configure the oscilloscope as follows:
 - (a) Channel-2 to J7-06 integration/hold clock signal.
 - (b) Channel-1 to J7-24 dump signal clock.
 - (c) Channel-1 (shielded cable) to J7-05 (I/H and Dump RTN).
 - (d) Internal trigger mode to channel-1.
 - (e) Amplitude and Time optimized for best resolution.
2. Photograph or plot the oscilloscope display and attach the photograph or plot to TDS 36.
3. From the photograph or plot, measure time and amplitude for the integrate/hold and dump clock signals. Verify that the data obtained are within the requirements specified on TDS 36 and Figure 2.
4. Leave the equipment in place and the unit turned on in preparation for the next test.

3.2.4.3.6.2 Integration time (analog outputs). The analog outputs integration time shall be tested as follows:

1. Reconfigure the test equipment as indicated in Figure 24.
2. Connect the oscilloscope, channel-2 positive line to J7-XX of the 37-pin breakout box. Where: XX indicates the pinout distribution for all the 13 channels as shown in Table III.
3. Start with the first channel of the above list. Adjust the oscilloscope for best amplitude and time resolution. The displayed signals should look like Figure 2.
4. Photograph or plot the display and attach it to the corresponding TDS (TDSs 37 through 43).
5. From the photograph or plot, measure the integration time and the amplitude. Verify that the data obtained is within the requirements specified in TDSs 37 through 43.
6. Repeat steps 2 through 5 to measure the integration time (analog output) for the remaining channels.
7. Leave the unit turned on and the test equipment in place in preparation for the next test.

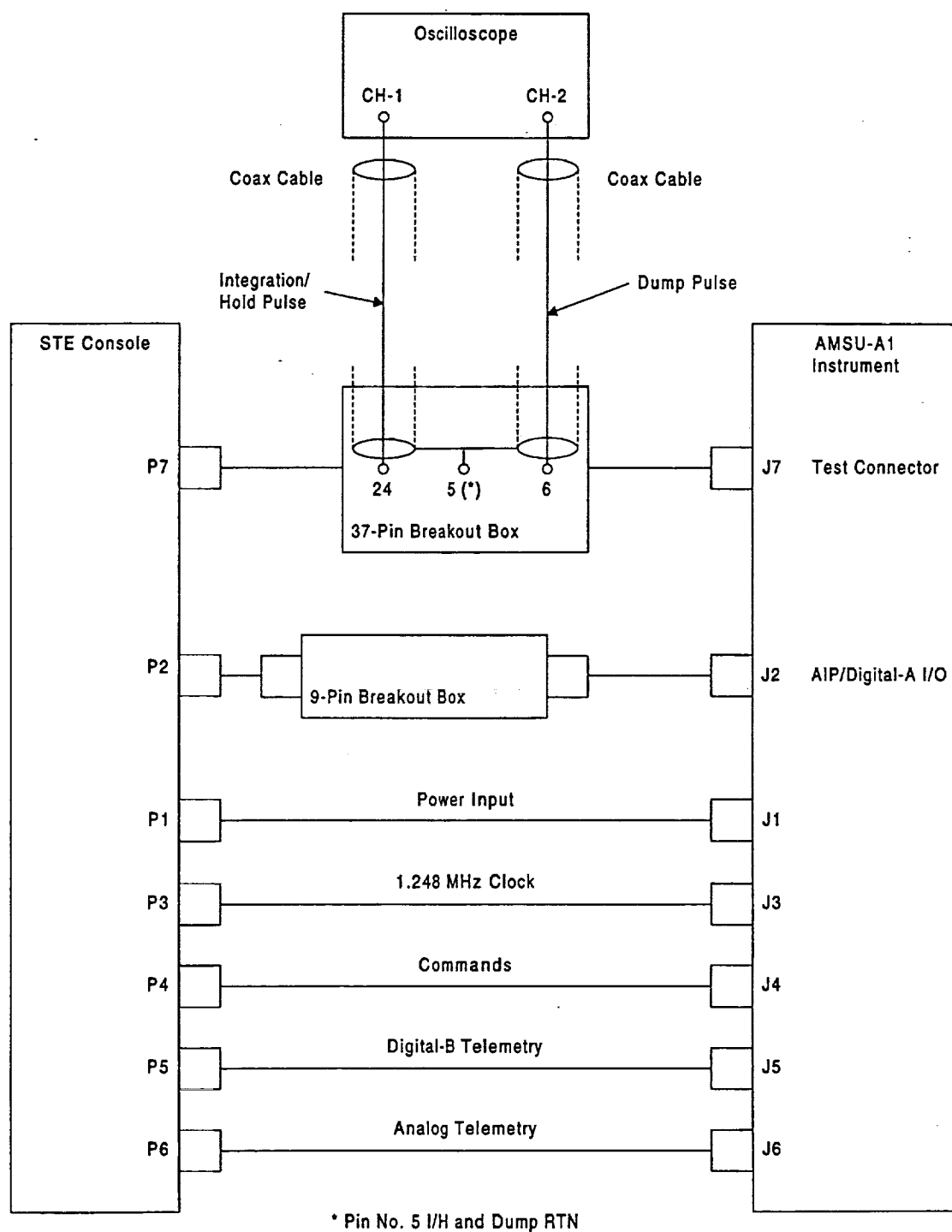
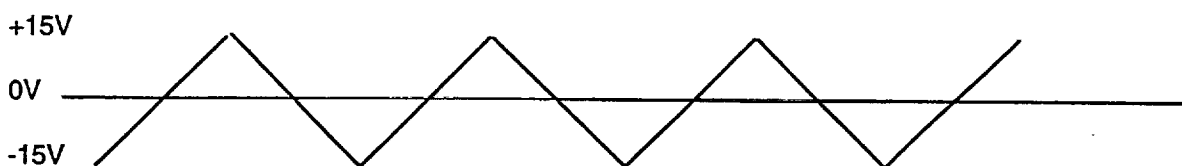


Figure 23. Integration/Hold and Dump Signals Verification Test Setup

3.2.4.3.6.3 PLLO No. 1 verification. The PLLO No. 1 shall be verified as follows:

1. Reconfigure the oscilloscope as indicated in Figure 25. Connect the oscilloscope channel-1 to J7-22 (PLLO No. 1).
2. From the Commands Menu of the STE, verify that the PLLO is selected in PLLO No. 1 as follows:
PLL POWER = PLLO#1 [18]
3. For S/N 101 - S/N 104, adjust the oscilloscope for best amplitude and time base. If the PLLO is locked properly, the oscilloscope will display a dc-voltage level of -15 to +15 V. Record the voltage level on TDS 44. Record PASS. (Any dc level recorded is considered PASS). If the PLLO is not locked properly, the scope will display a waveform similar to this:



Record FAIL on TDS 44. Discontinue the test until the deficiency is corrected.

4. For S/N 105 and above, if the PLLO is locked properly, the oscilloscope will display a dc-voltage = 4.0 ± 1 V. If the PLLO is not locked, the oscilloscope will display a dc-voltage of $+0.61 \pm 0.30$ V. If PLO is OFF, the oscilloscope will display a dc-voltage of 0.0 ± 0.2 V. If the PLLO is trying to acquire lock, the oscilloscope will display a various dc level. Record the voltage level on TDS 44.

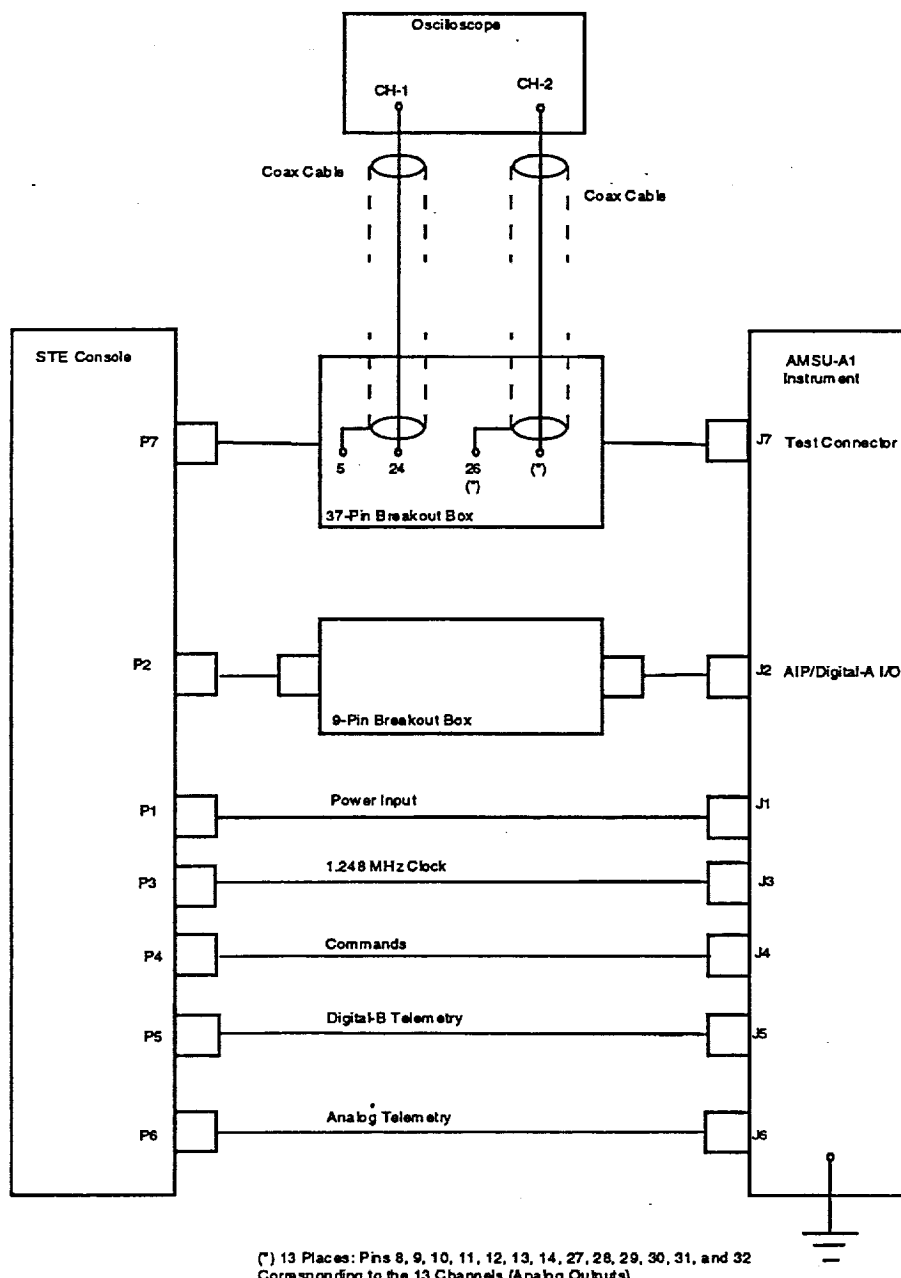


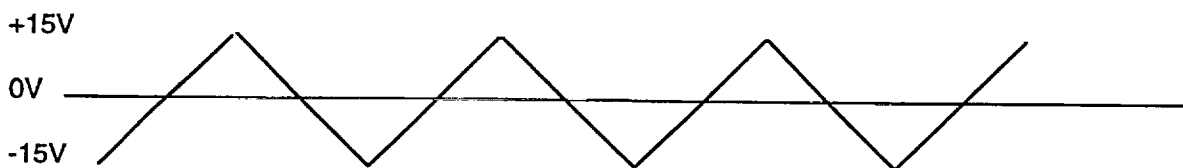
Figure 24. Integration Time (Analog Output) Verification Setup

Table III. Location and Frequency of Channel 3 through 15 Analog Outputs

Breakout Box Pin Location	Channel Distribution	Frequency
J7-08	Channel-03 Analog Output	50.3 GHz
J7-09	Channel-04 Analog Output	52.80 GHz
J7-10	Channel-05 Analog Output	53.596 GHz
J7-11	Channel-06 Analog Output	54.400 GHz
J7-12	Channel-07 Analog Output	54.940 GHz
J7-13	Channel-08 Analog Output	55.500 GHz
J7-14	Channel-09 Analog Output	57.290 GHz PLLO
J7-27	Channel-10 Analog Output	57.290 GHz PLLO
J7-28	Channel-11 Analog Output	57.290 GHz PLLO
J7-29	Channel-12 Analog Output	57.290 GHz PLLO
J7-30	Channel-13 Analog Output	57.290 GHz PLLO
J7-31	Channel-14 Analog Output	57.290 GHz PLLO
J7-32	Channel-15 Analog Output	89.000 GHz

3.2.4.3.6.4 *PLLO No. 2 verification.* The PLLO No. 2 shall be verified as follows:

1. Reconfigure the oscilloscope as indicated in Figure 25. Connect the oscilloscope channel-1 to J7-03 (PLLO No. 2).
2. Select the PLLO No. 2 unit by executing the following command:
[18] PLL POWER = PLLO#2
3. For S/N 101 - S/N 104, adjust the oscilloscope for best amplitude and time base. If the PLLO is locked properly, the oscilloscope will display a dc-voltage level of -15 to +15 V. Record the voltage level on TDS 44. Record pass. (Any dc level recorded is considered PASS). If the PLLO is not locked properly, the scope will display a waveform similar to this:



Record FAIL on TDS 44. Discontinue the test until the deficiency is corrected.

4. For S/N 105 and above, if the PLLO is locked properly, the oscilloscope will display a dc-voltage = 4.0 ± 1 V. If the PLLO is not locked, the oscilloscope will display a dc-voltage of $+0.61 \pm 0.30$ V. If PLO is OFF, the oscilloscope will display a dc-voltage of 0.0 ± 0.2 V. If the PLLO is trying to acquire lock, the oscilloscope will display a various dc level. Record the voltage level on TDS 44.

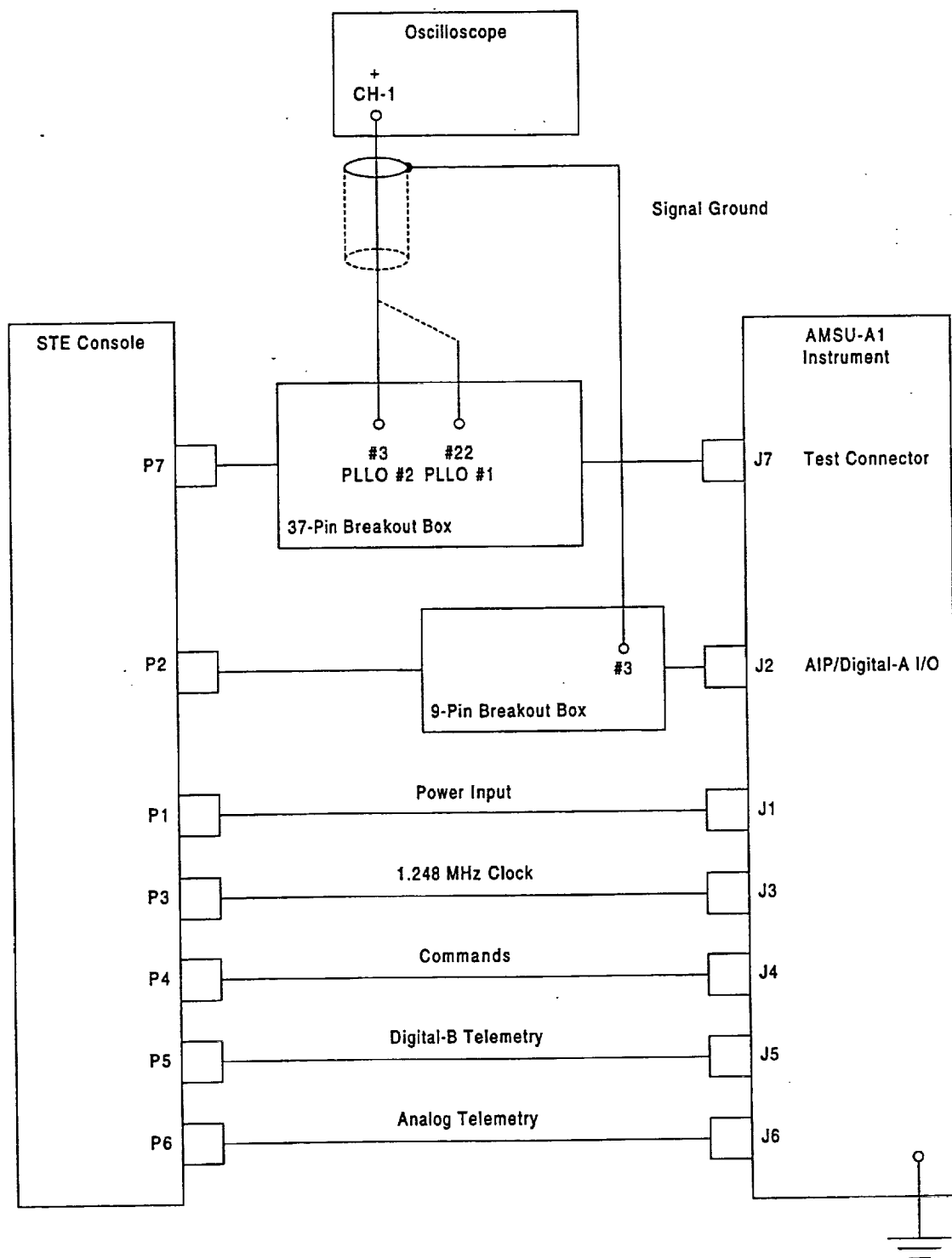


Figure 25. PLLO No. 1/No. 2 Test Setup



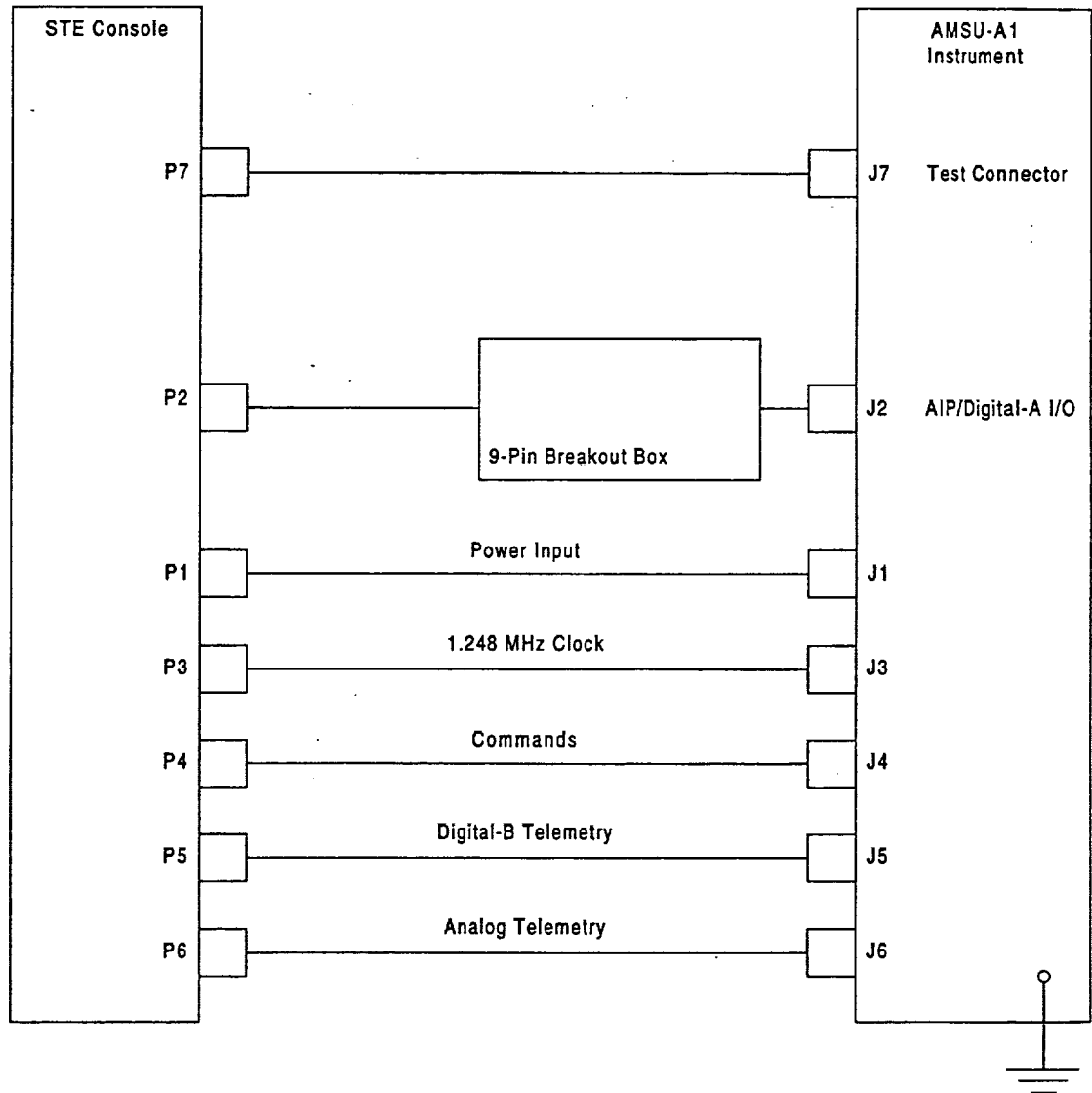


Figure 26. GSE Modes Verification Test

2. Turn the unit on. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	NO	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON		RETURN	[1]

Wait at least 18 seconds until the sending commands are acknowledged by the STE. At this point, the unit should be in the NO MODE with the STE collecting data.

3. Obtain a printout (9 pages) for all of the parameters ([II] through [VI]) described in 3.2.4.3.7 as follows:
- On Commands Menu, press: RETURN [1].
 - On Main Menu, select: [10] SELF TEST.
 - On Self Test Menu, select: [7] RUN GSE MODE.
(The computer will prompt: Enter GSE mode {0 to 15}.)
 - Select corresponding GSE mode under test.
 - Press PRINT [3] FULL. The computer will start printing all 9 pages.

3.2.4.3.7.2 GSE Mode-1. The GSE mode-1 shall be tested as follows:

[II], [III], and [III] Sync, Unit ID, and Digital-B

- Using the printout, verify that elements 1 through 8 are within the values specified on TDS 45. Record pass or fail.

NOTE

To verify the following steps, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS.

[IV] Reflector Positions

- Using the individual printout, verify that the reflector positions are within the values specified in AE-26002/1, TDS 5 and 6. Record pass or fail on TDS 46.

[V] Radiometric Data

- Using the individual printout, verify that the radiometric data are within the values specified on TDS 47.

[VI] Temperature Sensors

- Using the individual printout, verify that elements 1090 through 1180 are within the values specified on TDS 48 (sheets 1 and 2). Record pass or fail.

3.2.4.3.7.3 GSE Mode-2. The GSE Mode-2 shall be tested as follows:

1. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:
 - (a) Return to the Main Menu by pressing: RETURN [1].
 - (b) On Main Menu, select: [10] SELF TEST.
 - (c) On Self Test Menu, select: [7] RUN GSE MODE.
(The computer will prompt: Enter GSE mode {0 to 15}.)
 - (d) Select GSE mode 2 at the prompt.
 - (e) Press PRINT [3] FULL. The computer will start printing all 9 pages.

NOTE

To verify the following step, the operator may print out the individual parameters by using AE-26157 and attach the data to each TDS or the 9 full page printout may be used.

[IV] Reflector Positions

2. Using Pages 1 through 6 of the printout, verify that the reflector positions are within the values specified in AE-26002/1, TDS 5 and 6. Record pass or fail on TDS 46.

3.2.4.3.7.4 GSE Mode-3. The GSE Mode-3 shall be tested as follows:

1. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:
 - (a) Return to the Main Menu by pressing: RETURN [1].
 - (b) On Main Menu, select: [10] SELF TEST.
 - (c) On Self Test Menu, select: [7] RUN GSE MODE.
(The computer will prompt: Enter GSE mode {0 to 15}.)
 - (d) Select GSE mode 3 at the prompt.

NOTE

To verify the following step, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS or the 9 full page printout may be used.

[IV] Reflector Positions

2. Verify that both A1-1 and A1-2 reflectors increment one step every eight seconds.

3.2.4.3.7.5 GSE Mode-4. The GSE Mode-4 shall be tested as follows:

1. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:
 - (a) Return to the Main Menu by pressing: RETURN [1].

- (b) On Main Menu, select: [10] SELF TEST.
- (c) On Self Test Menu, select: [7] RUN GSE MODE.
(The computer will prompt: Enter GSE mode {0 to 15}.)
- (d) Select GSE mode 4 at the prompt.
- (e) Press PRINT [3] FULL. The computer will start printing all 9 pages.

NOTE

To verify the following step, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS or the 9 full page printout may be used.

[IV] Reflector Positions

- 2. Using pages 1 through 6 of the printout, verify that the reflector positions are within the values specified in AE-26002/1, TDS 5 and 6. Record pass or fail on TDS 46.

3.2.4.3.7.6 GSE Mode-5. The GSE Mode-5 shall be tested as follows:

- 1. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:
 - (a) Return to the Main Menu by pressing: RETURN [1].
 - (b) On Main Menu, select: [10] SELF TEST.
 - (c) On Self Test Menu, select: [7] RUN GSE MODE.
(The computer will prompt: Enter GSE mode {0 to 15}.)
 - (d) Select GSE mode 5 at the prompt.
 - (e) Press PRINT [3] FULL. The computer will start printing all 9 pages.

NOTE

To verify the following step, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS or the 9 full page printout may be used.

[IV] Reflector Positions

- 2. Using pages 1 through 6 of the printout, verify that the reflector positions are within the values specified in AE-26002/1, TDS 5 and 6. Record pass or fail on TDS 46.

3.2.4.3.7.7 GSE Mode-7. The GSE Mode-7 shall be tested as follows:

- 1. Obtain a printout (9 pages) for all of the parameters ([I] through [VI]) described in 3.2.4.3.7 as follows:
 - (a) Return to the Main Menu by pressing: RETURN [1].
 - (b) On Main Menu, select: [10] SELF TEST.

- (c) On Self Test Menu, select: [7] RUN GSE MODE.
(The computer will prompt: Enter GSE mode {0 to 15}.)
- (d) Select GSE mode 7 at the prompt.
- (e) Press PRINT [3] FULL. The computer will start printing all 9 pages.

NOTE

To verify the following steps, the operator may printout the individual parameters by using AE-26157 and attach the data to each TDS or he may use the 9 page full printout.

IV] Reflector Positions

- 2. Using pages 1 through 6 of the printout, verify that the reflector positions are within the values specified in AE-26002/1, TDS 5 and 6. Record pass or fail on TDS 46.
- 3. Set the STE to GSE MODE-0, failure to do so will cause the STE to produce faulty data when in normal mode. To enter GSE-MODE-0 into the computer:
 - (a) Return to the Main Menu by pressing: RETURN [1].
 - (b) On Main Menu, select: [10] SELF TEST.
 - (c) On Self Test Menu, select: [7] RUN GSE MODE.
(The computer will prompt: Enter GSE mode {0 to 15}.)
 - (d) Select GSE mode 0.

3.2.4.4 Radiometer functional test. The purpose of the radiometer functional test is to verify the performance of the AMSU-A1 radiometer at the system level. This test shall consist of the following subtests:

- a. PLLO frequency measurements 3.2.4.4.1
- b. Relative NEAT measurements 3.2.4.4.2

3.2.4.4.1 PLLO frequency measurements. Measure the PLLO frequencies as follows:

- 1. Prepare the unit and the test equipment as indicated in Figure 27. Frequency verification for the receiver shall be performed on the following frequency (see Figure 28 for sample plot):
(A1-1) Ch-9,10,11,12,13 and 14: 57.290344 GHz (PLLO No. 1 and PLLO No. 2)
- 2. Turn on the unit by using the procedure stated in 3.2.3.5. Allow not less than one hour for the equipment to warm-up and for the unit to stabilize.

On the Commands Menu, execute the following commands:

- (a) [14] ANTENNA WARM CAL POS = NO
- (b) [15] ANTENNA COLD CAL POS = NO

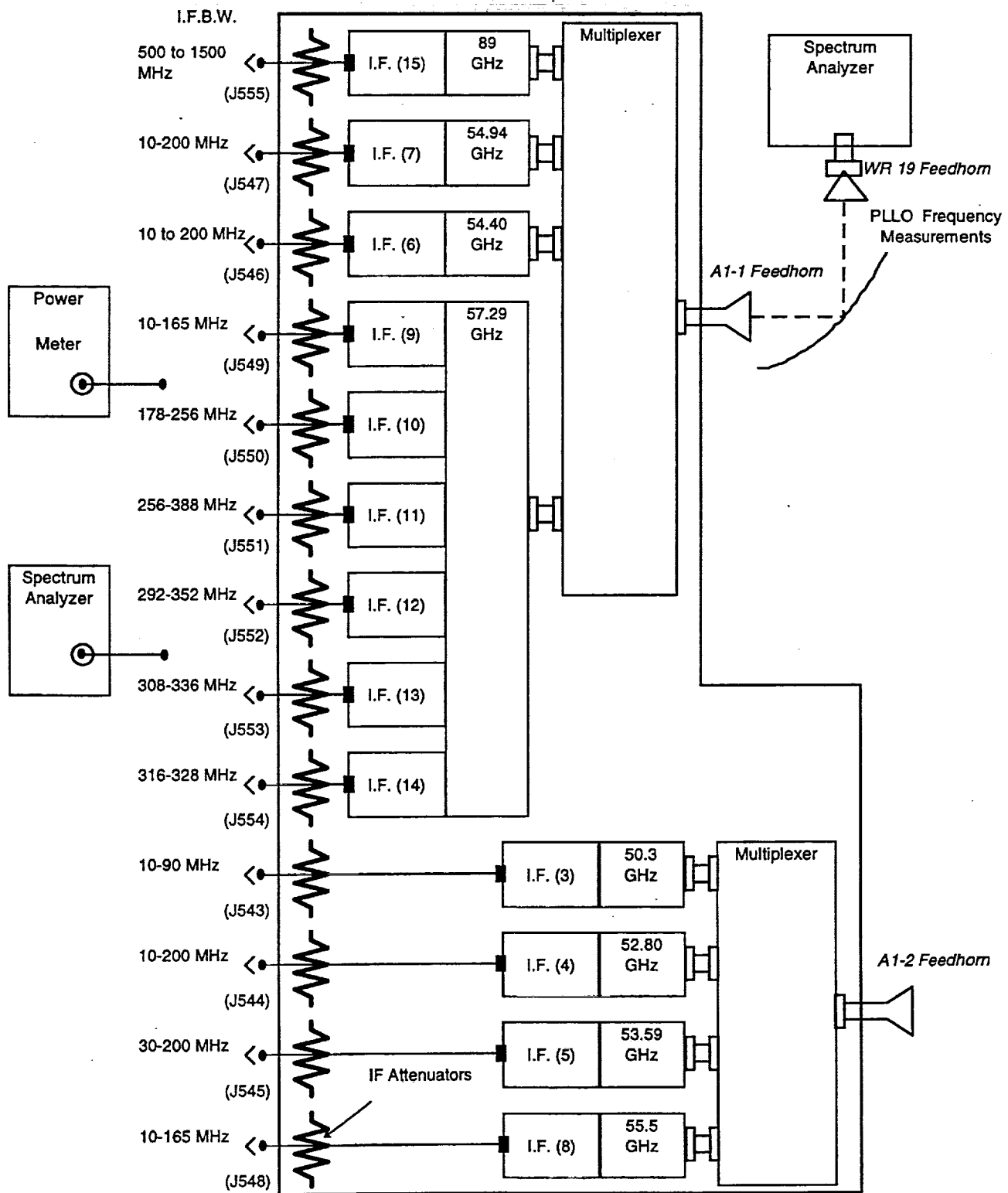


Figure 27. Configuration for RF Measurements

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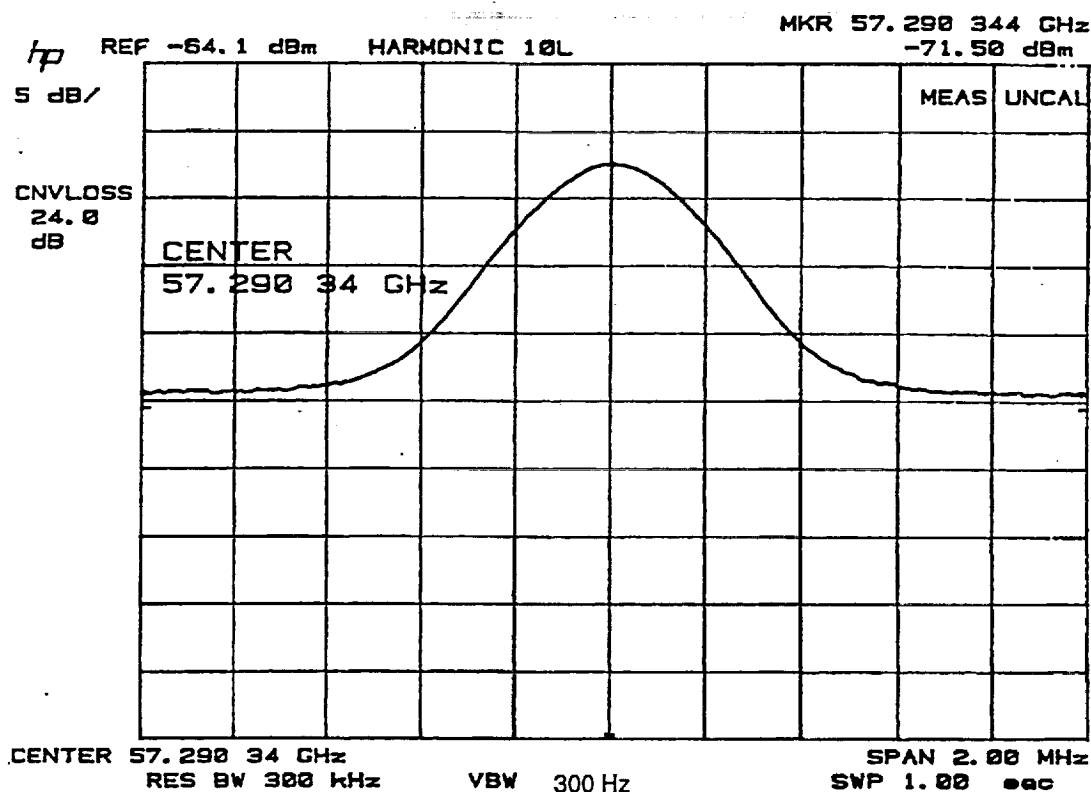


Figure 28. Sample Plot

(c) [16] ANTENNA NADIR POS = YES

(d) [17] ANTENNA FULL SCAN MODE = NO

3. Record the measured frequencies on TDS 49, and plotter data. Repeat step 2 for PLLO No. 2.
4. Remove the test equipment but leave the unit on in preparation for the next test.

3.2.4.4.2 Relative radiometer NEAT measurements. The purpose of this test is to perform a preliminary evaluation of the radiometer NEAT at a system level. Since the STE is not in the thermal-vacuum configuration, no temperature readings from the cold load are available. To compute the NEAT for this test, the temperature used for the cold load shall be LN₂ temperature.

The data obtained from this test are considered as relative NEAT and are to be used as a diagnostic tool to verify proper operation of the A/D converters and the spacecraft interface.

The equation to determine relative NEAT is as follows:

$$NEAT = \frac{SD \times (Th - Tc)}{M - N}$$

where:

- SD = Standard deviation of 120 samples at hot temperature (warm load)
- Th = Standard room temperature = 300 K
- Tc = Standard LN₂ temperature = 80 K

M = Average of hot counts (120 samples)
N = Average of cold counts (30 samples)

The sequence of testing shall be as follows:

- a. Equipment preparation and setup configuration
- b. Warm load radiometric data
- c. Cold load radiometric data
- d. Relative NEAT data collection

3.2.4.4.2.1 *Equipment preparation and setup configuration.* The equipment shall be set up as follows:

WARNING

The use of liquid nitrogen in a confined poorly ventilated area can cause asphyxiation and death due to a lack of oxygen (oxygen concentration below 20 percent). Accidental contact with liquid nitrogen will cause severe frostbite to the eyes or skin. When handling liquid nitrogen, personnel shall observe the following safety precautions:

- a. Ensure that the work area is well ventilated to prevent excessive gas buildup.
 - b. To protect your eyes always wear a face shield or safety goggles (safety glasses without side shields do not provide adequate protection).
 - c. To protect exposed skin, always wear an apron when pouring LN2 and whenever exposed to LN2, always wear a lab coat, gloves made for cryogenic work, cuffless trousers (worn outside the boots or shoes), and safety shoes.
 - d. Do not fill target fuller than 1.0 inch from the top. Fill target at the floor level, away from unit.
 - e. Do not move filled target without cover in place.
1. Configure the test equipment and the unit as indicated in Figure 29, except for the cold loads.
 2. Execute commands as necessary to obtain the following configuration:

COMMANDS			
[9] MODULE POWER =	CONNECT	ANTENNA IN COLD CAL POS =	NO [15]
[10] SURVIVAL HTR PWR =	OFF	ANTENNA IN NADIR POS=	NO [16]
[11] MODULE TOTALLY OFF =	ON	ANTENNA FULL SCAN MODE =	NO [17]
[12] SCANNER A1-1 POWER =	ON	PLL POWER =	PLLO#1 [18]
[13] SCANNER A1-2 POWER =	ON	COLD CAL POSITION MSB =	ZERO [19]
[14] ANTENNA WARM CAL POS =	YES	COLD CAL POSITION LSB =	ZERO [20]
POWER [4] ON			

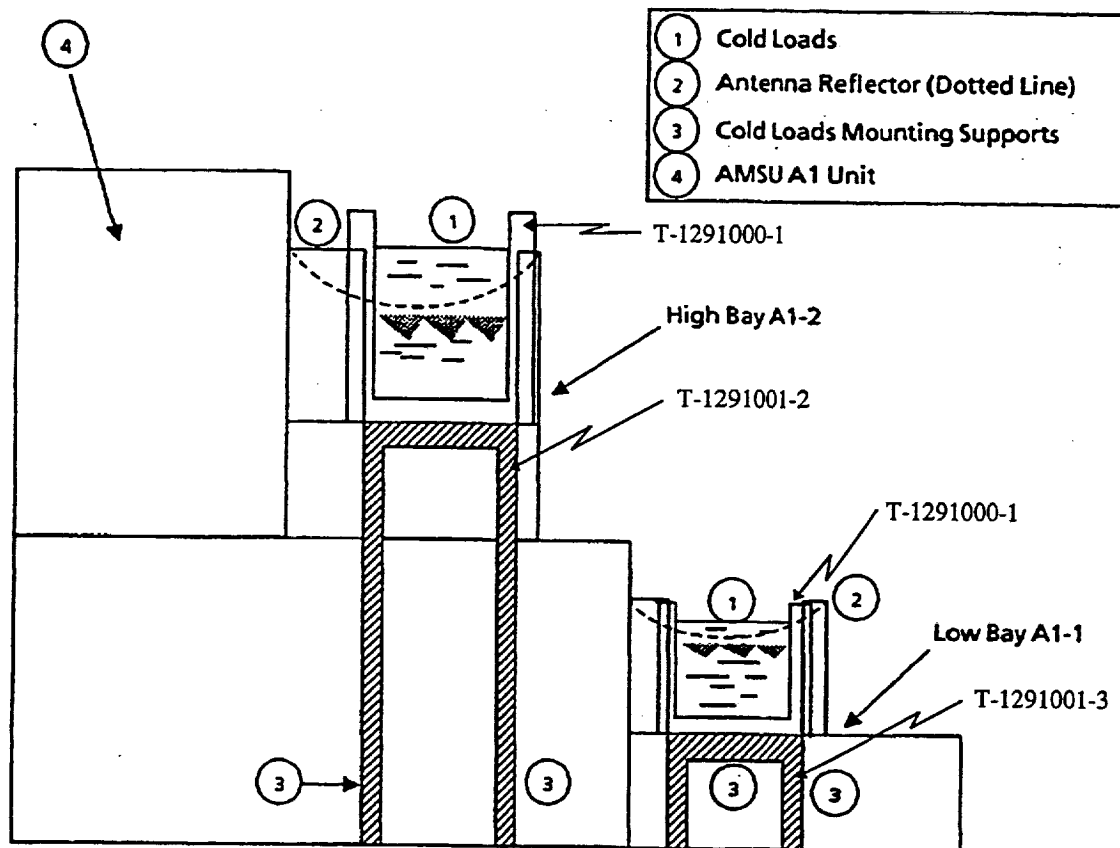


Figure 29. NEAT Setup Configuration

3. Allow 30 minutes for the unit to stabilize.

3.2.4.4.2.2 *Relative NEAT data collection*

1. Return to the Main Menu by pressing [1] RETURN.
2. On the Main Menu, select [13] FUNCTIONAL TEST. (The STE will automatically command the unit to position the antenna reflector to the warm and cold loads as it is taking data.)
3. Wait approximately one minute to verify that the NEAT results are displayed on the screen. Obtain a printout. Repeat step 2 four times and obtain four additional printouts. Average NEAT from these five data points. Enter the values on TDS 50. Attach the printout to the data sheet.
4. Repeat steps 1, 2, and 3 for the PLLO No. 2. Allow 30 minutes for the unit to stabilize after switching to PLLO No. 2.
5. Remove the cold loads and associated hardware.

3.2.4.5 Channel identification test. The purpose of the channel identification test is to verify the proper final configuration /assembly of each radiometer channel from antenna input to the spacecraft interface.

1. Configure the unit and test equipment as shown in Figures 26 and 32.

2. Connect the STE to instrument using the following STE interface cables.
 - a. STE interface cable J1 (1356648-1)
 - b. STE interface cable J2 (1356648-2)
 - c. STE interface cable J3 (1356648-3)
 - d. STE interface cable J4 (1356648-4)
3. Follow the turn-on procedure per para. 3.2.3.5.
4. Enter the STE command "SCANNER A1-1 POWER." Wait 18 seconds before issuing the next command.
5. Enter the STE command "SCANNER A1-2 POWER." Wait 18 seconds before issuing the next command.
6. Enter the STE command "ANTENNA COLD CAL." Wait 18 seconds before issuing the next command. Both reflectors should scan to the cold calibration beam position.
7. Enter the STE command "[1] RETURN" to return to the monitor only screen.
8. Enter the STE command "[10] DIGITAL-A." The STE should now display the digital-A data screen shown in Figure 30. From this screen enter the STE command "[9] BEAM POSITION NN-ALL CHANNELS."
9. The STE then asks "ENTER BEAM POSITION NO (1 TO 30)." Enter "30" to show the radiometric counts data for channels 3-15. The STE should now display the radiometric data screen shown in Figure 31, except with a different set of count data.
10. Allow the instrument to stabilize for approximately 20 minutes. Enter the STE command "[2]" to obtain a screen only printout.
11. Configure the unit and test equipment as shown in Figure 32. Turn ON the sweeper and allow to warm up approximately 10 minutes. Make sure that the RF power is OFF during sweeper warm up.

CAUTION

Extreme care must be used when turning on RF power. When RF power is first applied the multiplier/gain horn should be approximately three to four feet from the unit. The RF power setting should be no greater than -20 dBm.

12. Set the sweeper frequency to 50.35 ± 0.01 GHz and set the RF power level to -20 dBm. Position the multiplier/gain horn three to four feet from the instrument so that the A1-2 antenna and gain horn are approximately aligned (see Figure 32). Rotate the gain horn, if needed, to the vertical polarization position.
13. Turn ON the RF power making sure the power level is set to -20 dBm. Allow the multiplier to warm up approximately five minutes.
14. At the STE screen compare the radiometric data counts of channel 3 to the counts printed out at step 10. Enter the STE command "[2]" to obtain a screen only printout.
15. From the printouts obtained in steps 10 and 14, verify that the radiometric data counts for channel 3 have increased significantly, approximately 1000 or more, and that the other channels' data counts have remained relatively unchanged, less than 300 counts.
16. Record the counts difference on TDS 21 of channel 3 from the printouts obtained in steps 10 and 14 and attach printouts to TDS 21.
17. Repeat steps 12 through 16 for the frequencies and polarizations listed on TDS 21.

18. After all A1 channels have been identified, turn OFF the RF power. Return the reflectors to the warm cal position.
19. Turn the STE Q/Main and N/Pulse switches to OFF.
20. Turn the STE power supply panel main power switch OFF.

EOS	A1-03 E1.EXE;31	COLD CAL MODE	P15-JUN-98	09:36:59	SCAN NUMBER	34
[5]	SCIENCE DATA	ELEMENT	0000			
[6]	CONTROL/STATUS	ELEMENT	00			
[7]	ENGINEERING	ELEMENT	00			
[8]	DATA STREAM (64 VALUES)					
[9]	BEAM POSITION NN-ALL CHANNELS					
[10]	CHANNEL NN -ALL BEAM POSITIONS					
[11]	WARM CALIBRATE					
[12]	COLD CALILBRATE					
[13]	REFLECTOR POSITIONS					
[14]	TEMPERATURE DATA (16 VALUES)					
ENGR OK	POWER	ON	CHECKSUM IN 15A1 SA28	34SA29	47	
		SCREEN ONLY [2]	PRINT [3]	FULL	[1]	RETURN
SELECT BUTTON 2						

Figure 30. Digital-A Data Screen

EOS	A1-03 E1.EXE;31 COLD CAL MODE			P15-JUN-98	09:49:07 SCAN NUMBER 11	
[5]	SCIENCE DATA	ELEMENT	0000			
[6]	CONTROL/STATUS	ELEMENT	00			
[7]	ENGINEERING	ELEMENT	00			
RADIOMETRIC DATA						
BEAM POSITION						
	CH	DATA	CH	DATA	CH	DATA
	3	15798	8	15414	13	15811
	4	16252	9	16176	14	16029
	5	15661	10	16010	15	15102
	6	16413	11	15639		
	7	18044	12	15817		
[21] UP [22] DOWN						
ENGR OK	POWER	ON	CHECKSUM	IN DF5D CALC	DFSD SA28	11 SA29 14
SELECT BUTTON 2						

Figure 31. Radiometric Data Screen

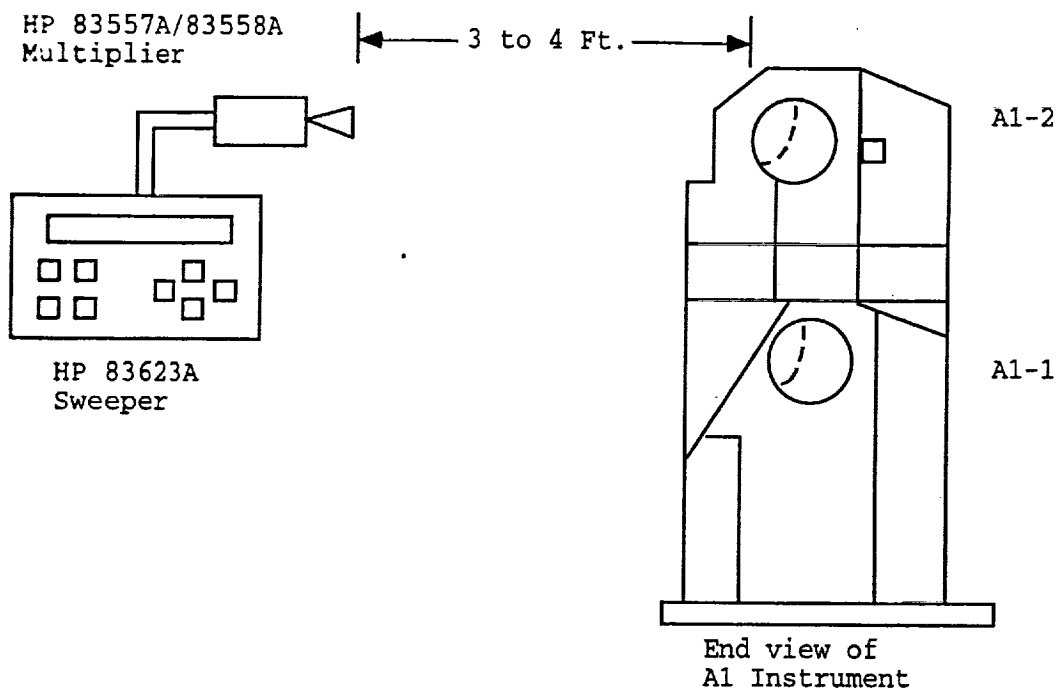


Figure 32. Channel Identification Setup

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Aerojet Quality Assurance shall inspect in accordance with the requirements of this test procedure and S-480-79 and S-480-80. Quality Control shall verify all test set-ups prior to start of test. Bonded software shall be used for all tests and shall be obtained from Quality Control. Quality Control shall review all test data for conformance to success criteria. The test data shall include test limits. For tests that satisfy requirements from S-480-80 on protoflight and flight units, customer representatives shall be invited to monitor tests and shall be invited to review the data and show approval on the test data sheets.

4.1.1 Test facilities. Unless otherwise specified, the examinations and tests described herein shall be conducted at GenCorp Aerojet, Azusa Operations, Azusa, CA.

4.1.2 Electrostatic Device (ESD) handling. All electronic hardware shall be handled in accordance with Aerojet Standard STD-2454.

4.2 Monitoring procedures. All tests in this procedure shall be monitored by quality control.

4.2.1 Test equipment. Test equipment calibration procedures shall comply with the requirements of MIL-STD-45662.

4.2.2 Software. Bonded software shall be used at all times.

4.3 Monitoring procedures for materials. Not applicable.

4.4 Certification. Certification for handling ESD-sensitive equipment is required for all personnel working on the assembly and test of the AMSU-A instrument, per STD-2454.

4.5 Test methods

4.5.1 Accept-reject criteria. The accept-reject criteria for each examination or test shall be as specified in the data sheets included in each phase of the applicable test procedure. The test results shall be recorded on the data sheets to demonstrate compliance with the applicable specification requirements. Methods of analysis shall be appropriate for the parameters being inspected. It shall be the responsibility of Aerojet to review the test data and determine conformance of the unit under test to the performance requirements contained in S-480-80 and this specification.

In the event of a failure during any phase of this test procedure, the test activity shall record the required information on the Test Anomaly Record (TAR) and alert the design assurance and quality engineers. Except for failures which only represent a limited out-of-tolerance condition for a particular parameter and are not expected to interfere with the balance of the testing and which are non-destructive, the testing must be stopped until a complete description of the observed anomaly failure is documented and a Failure Analysis Strategy (FAS) is formulated, documented, and implemented to preclude loss of information or evidence that may facilitate determining the failure cause. The full set of data from the referenced tests is required in order to formulate a plan of action. The cognizant reliability engineer, quality assurance engineer, and the system or responsible test engineer shall jointly develop the FAS which must be approved by Design Assurance and Quality Assurance. Analysis and reporting shall be performed per Aerojet procedures.

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4.5.2 General. All data sheets associated with the tests on the unit plus the data reduction and analysis of specific parameters required by each applicable test procedure obtained from screen printouts and plots, oscilloscope photographs, or magnetic recordings shall be included with the associated shop order. During tests in which a CRT screen is to be printed or plotted and retained as a data sheet, the following annotation shall be applied:

Test/Systems Engineer:
(Signature)

Quality Control:
(Signature)

Customer Representative
(Flight Hardware Only):

(Signature)

Date:

Test Paragraph No.:

Subassembly/Assembly Serial No.:

Shop Order No.:

4.5.2.1 Test data. The test data shall be that which was obtained during performance of the tests specified and recorded on the Test Data Sheet(s) (TDS) (see Appendix A) and on printouts and plots and shall be attached to the shop order associated with the test.

5. PREPARATION FOR DELIVERY

This section is not applicable to this specification.

6. NOTES

6.1 *Acronyms and abbreviations*

AMSU	Advanced Microwave Sounding Unit
ATB	Analog telemetry bus
AWG	American Wire Gage
BP	Beam Position
CAL	Calibrate
CPT	Comprehensive performance test
d	delta
DC	Direct current
DVM	Digital volt meter
EMI	Electromagnetic interference
ESD	Electrostatic Sensitive Device
EXT	External
FAS	Failure analysis strategy
GHz	Gigahertz
GIIS	General Instrument Interface Specification
GND	Ground
GSE	Ground Support Equipment
HTR	Heater
kHz	Kilohertz
LPT	Limited performance test
LSB	Least significant bit
MA	Milliampere
METSAT	Meteorological Satellite
MLB	Main load bus
MFG	Manufacturer
MMW	Millimeter wave
MS, MSEC	Millisecond
MSB	Most significant bit
MV	Millivolt
NEAT	Noise equivalent delta temperature
PFM	Protoflight Model
PLB	Pulse load bus
PLL	Phase lock loop
PLLO	Phase lock loop oscillator

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POS	Position
PWR	Power
RTN	Return
STE	Special Test Equipment
SW	
TAR	Test Anomaly Record
TDS	Test Data Sheet
TLM	Telemetry
TM	Instrument Temperature
UIIS	Unique Instrument Interface Specification
Vdc	Volts, direct current
μ s	Microsecond

6.2 Changes. Because of the extensiveness of the changes since the previous issue, no marginal notations have been used to show where changes have been made.

APPENDIX A

TEST DATA SHEETS

10.1 Scope. This appendix contains the test data sheets for all tests and inspections listed in section 3.

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TEST DATA SHEET 1 (Sheet 1 of 9)
Grounding System Test (Paragraph 3.2.4.1)

J1 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-1	+28 V MLB	> 100k		
J1-2	+28 V MLB	> 100k		
J1-3	+28 V MLB RTN	> 100k		
J1-4	+28 V MLB RTN	> 100k		
J1-5	+28 V PLB	> 100k		
J1-6	+28 V PLB	> 100k		
J1-7	+28 V PLB RTN	> 100k		
J1-8	+28 V PLB RTN	> 100k		
J1-9	+28 V TMB	> 100k		
J1-10	28 V TMB RTN	> 100k		
J1-11	NO CONNECTION	> 100k		
J1-12	NO CONNECTION	> 100k		
J1-13	CHASSIS GROUND (E1)	< 1		
J1-14	+28 V MLB	> 100k		
J1-15	+28 V MLB	> 100k		
J1-16	+28 V MLB RTN	> 100k		
J1-17	+28 V MLB RTN	> 100k		
J1-18	+28 V PLB	> 100k		
J1-19	+28 V PLB	> 100k		
J1-20	+28 V PLB RTN	> 100k		
J1-21	+28 V PLB RTN	> 100k		
J1-22	+28 V TMB	> 100k		
J1-23	28 V TMB RTN	> 100k		
J1-24	SAFETY HTR PWR	> 100k		
J1-25	SAFETY HTR RTN	> 100k		

TEST DATA SHEET 1 (Sheet 2 of 9)
Grounding Interface Test (Paragraph 3.2.4.1)

J2 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J2-1	Chassis Ground (E2)	< 1		
J2-2	DATA CLOCK (C1)	> 100k		
J2-3	Signal Return	> 100k		
J2-4	No Connection	> 100k		
J2-5	DIGITAL-A DATA OUT	> 100k		
J2-6	DATA ENABLE (A1)	> 100k		
J2-7	8 SEC SYNC PULSE	> 100k		
J2-8	No Connection	> 100k		
J2-9	No Connection	> 100k		

J3 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J3-1	1.248 MHz CLK	> 100k		
J3-2	1.248 MHz CLK RTN	> 100k		
J3-3	Chassis GND (E3)	< 1		

J5 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J5-1	Chassis Ground (E5)	< 1		
J5-2	MODULE PWR IND	> 100k		
J5-3	COLD CAL POS MSB (OUT)	> 100k		
J5-4	No Connection	> 100k		
J5-5	SCANNER A1-2 ON/OFF	> 100k		
J5-6	ANT IN COLD CAL POS	> 100k		
J5-7	PLL PRI/RED	> 100k		
J5-8	No Connection	> 100k		
J5-9	SURV HTR ON/OFF	> 100k		
J5-10	No Connection	> 100k		
J5-11	COLD CAL POS LSB (OUT)	> 100k		
J5-12	SCANNER A1-1 ON/OFF	> 100k		
J5-13	ANT IN WARM CAL POS	> 100k		
J5-14	ANT IN NADIR POS	> 100k		
J5-15	FULL SCAN MODE	> 100k		

TEST DATA SHEET 1 (Sheet 3 of 9)
Grounding System Test (Paragraph 3.2.4.1)

J4 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J4-1	Chassis Ground (E4)	< 1		
J4-2	MODULE PWR DISCONN	> 100k		
J4-3	SURVIVAL HTR ON	> 100k		
J4-4	MODULE TOTALLY OFF	> 100k		
J4-5	SCANNER A1-2 ON/OFF	> 100k		
J4-6	ANT AT COLD CAL POS	> 100k		
J4-7	PLL SELECT	> 100k		
J4-8	ANT AT NADIR POS	> 100k		
J4-9	COLD CAL POS MSB (IN)	> 100k		
J4-10	No Connection	> 100k		
J4-11	No Connection	> 100k		
J4-12	+10 V INTERFACE BUS	> 100k		
J4-13	10 V INTERFACE BUS RTN	> 100k		
J4-14	MODULE PWR CONN	> 100k		
J4-15	SURVIVAL HTR OFF	> 100k		
J4-16	SCANNER A1-1 ON/OFF	> 100k		
J4-17	ANT AT WARM CAL POS	> 100k		
J4-18	FULL SCAN	> 100k		
J4-19	COLD CAL POS LSB (IN)	> 100k		
J4-20	No Connection	> 100k		
J4-21	No Connection	> 100k		
J4-22	No Connection	> 100k		
J4-23	No Connection	> 100k		
J4-24	+10 V INTERFACE BUS	> 100k		
J4-25	10 V INTERFACE BUS RTN	> 100k		

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TEST DATA SHEET 1 (Sheet 4 of 9)
Grounding System Test (Paragraph 3.2.4.1)

J6 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J6-1	Chassis GND (E6)	< 1		
J6-2	RF SHELF A1-1 TEMP	> 100k		
J6-3	A1-1 SCAN. MTR. TEMP	> 100k		
J6-4	WARM LOAD A1-1 TEMP	> 100k		
J6-5	No Connection	> 100k		
J6-6	PLLO RED LOCK DETECT	> 100k		
J6-7	No Connection	> 100k		
J6-8	A1-1 DRIVE MTR CURR	> 100k		
J6-9	+15 V ANT DR MON	> 100k		
J6-10	+5 V ANT DR MON	> 100k		
J6-11	+15 V SIG PROC MON	> 100k		
J6-12	+5 V SIG PROC MON	> 100k		
J6-13	L.O. VOLTAGE CH 3 MON	> 100k		
J6-14	L.O. VOLTAGE CH 5 MON	> 100k		
J6-15	L.O. VOLTAGE CH 7 MON	> 100k		
J6-16	+15 VDC PLL LO MON	> 100k		
J6-17	+10 V MIXER/AMP MON	> 100k		
J6-18	L.O. VOLTAGE CH 15 MON	> 100k		
J6-19	No Connection	> 100k		
J6-20	28 V TMB RTN	> 100k		
J6-21	RF SHELF A1-2 TEMP	> 100k		
J6-22	A1-2 SCAN MTR TEMP	> 100k		
J6-23	WARM LOAD A1-2 TEMP	> 100k		
J6-24	No Connection	> 100k		
J6-25	PLLO PRI LOCK DETECT	> 100k		
J6-26	No Connection	> 100k		
J6-27	A1-2 DRIVE MTR CURR	> 100k		
J6-28	-15 V ANT DR MON	> 100k		
J6-29	-15 V SIG PROC MON	> 100k		
J6-30	L.O. VOLTAGE CH 4 MON	> 100k		
J6-31	L.O. VOLTAGE CH 6 MON	> 100k		
J6-32	L.O. VOLTAGE CH 8 MON	> 100k		
J6-33	-15 VDC PLL LO MON	> 100k		
J6-34	+8 V IF AMP MON	> 100k		
J6-35	No Connection	> 100k		
J6-36	No Connection	> 100k		
J6-37	No Connection	> 100k		

TEST DATA SHEET 1 (Sheet 5 of 9)
Grounding System Test (Paragraph 3.2.4.1)

J7 of Spacecraft Interface				
From Chassis Ground to	Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J7-1	Chassis GND (E7)	< 1		
J7-2	No Connection	> 100k		
J7-3	REDUN PLO LOCK DET	> 100k		
J7-4	15 V RTN (2/3)	> 100k		
J7-5	15 V RTN (2/3)	> 100k		
J7-6	DUMP TEST POINT	> 100k		
J7-7	No Connection	> 100k		
J7-8	CH3 OUT TEST POINT	> 100k		
J7-9	CH4 OUT TEST POINT	> 100k		
J7-10	CH5 OUT TEST POINT	> 100k		
J7-11	CH6 OUT TEST POINT	> 100k		
J7-12	CH7 OUT TEST POINT	> 100k		
J7-13	CH8 OUT TEST POINT	> 100k		
J7-14	CH9 OUT TEST POINT	> 100k		
J7-15	No Connection	> 100k		
J7-16	No Connection	> 100k		
J7-17	GSE CMD LSB	> 100k		
J7-18	GSE CMD MSB-1	> 100k		
J7-19	+5 V GSE INTERLOCK A	> 100k		
J7-20	No Connection	> 100k		
J7-21	No Connection	> 100k		
J7-22	PRI PLO LOCK DET	> 100k		
J7-23	No Connection	> 100k		
J7-24	I/H TEST POINT	> 100k		
J7-25	No Connection	> 100k		
J7-26	15 V RTN (2/3)	> 100k		
J7-27	CH10 OUT TEST POINT	> 100k		
J7-28	CH11 OUT TEST POINT	> 100k		
J7-29	CH12 OUT TEST POINT	> 100k		
J7-30	CH13 OUT TEST POINT	> 100k		
J7-31	CH14 OUT TEST POINT	> 100k		
J7-32	CH15 OUT TEST POINT	> 100k		
J7-33	No Connection	> 100k		
J7-34	No Connection	> 100k		
J7-35	GSE CMD MSB	> 100k		
J7-36	5 V RTN (1)	> 100k		
J7-37	+5 V GSE INTERLOCK B	> 100k		

TEST DATA SHEET 1 (Sheet 6 of 9)
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-1	J1-2	+28 V MLB	< 1		
J1-1	J1-14	+28 V MLB	< 1		
J1-1	J1-15	+28 V MLB	< 1		
J1-3	J1-4	28 V MLB RTN	< 1		
J1-3	J1-16	28 V MLB RTN	< 1		
J1-3	J1-17	28 V MLB RTN	< 1		
J1-5	J1-6	+28 V PLB	< 1		
J1-5	J1-18	+28 V PLB	< 1		
J1-5	J1-19	+28 V PLB	< 1		
J1-7	J1-8	28 V PLB RTN	< 1		
J1-7	J1-20	28 V PLB RTN	< 1		
J1-7	J1-21	28 V PLB RTN	< 1		
J1-9	J1-22	+28 V TMB	< 1		
J1-10	J1-23	28 V TMB RTN	< 1		
J1-10	J6-20	28 V TMB RTN	< 1		
J4-12	J4-24	+10 V INTERFACE BUS	< 1		
J4-13	J4-25	10 V INTERFACE BUS RTN	< 1		
J1-1	J1-3	+28 V MLB	> 100k		
J1-1	J1-5	+28 V MLB	> 100k		
J1-1	J1-7	+28 V MLB	> 100k		
J1-1	J1-9	+28 V MLB	> 100k		
J1-1	J1-10	+28 V MLB	> 100k		
J1-1	J1-24	+28 V MLB	> 100k		
J1-1	J1-25	+28 V MLB	> 100k		
J1-1	J2-3	+28 V MLB	> 100k		
J1-1	J4-12	+28 V MLB	> 100k		
J1-1	J4-13	+28 V MLB	> 100k		
J1-3	J1-5	28 V MLB RTN	> 100k		
J1-3	J1-7	28 V MLB RTN	> 100k		
J1-3	J1-9	28 V MLB RTN	> 100k		
J1-3	J1-10	28 V MLB RTN	> 100k		
J1-3	J1-24	28 V MLB RTN	> 100k		
J1-3	J1-25	28 V MLB RTN	> 100k		
J1-3	J2-3	28 V MLB RTN	> 100k		
J1-3	J4-12	28 V MLB RTN	> 100k		
J1-3	J4-13	28 V MLB RTN	> 100k		

TEST DATA SHEET 1 (Sheet 7 of 9)
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J1-5	J1-7	+28 V PLB	> 100k		
J1-5	J1-9	+28 V PLB	> 100k		
J1-5	J1-10	+28 V PLB	> 100k		
J1-5	J1-24	+28 V PLB	> 100k		
J1-5	J1-25	+28 V PLB	> 100k		
J1-5	J2-3	+28 V PLB	> 100k		
J1-5	J4-12	+28 V PLB	> 100k		
J1-5	J4-13	+28 V PLB	> 100k		
J1-7	J1-9	28 V PLB RTN	> 100k		
J1-7	J1-10	28 V PLB RTN	> 100k		
J1-7	J1-24	28 V PLB RTN	> 100k		
J1-7	J1-25	28 V PLB RTN	> 100k		
J1-7	J2-3	28 V PLB RTN	> 100k		
J1-7	J4-12	28 V PLB RTN	> 100k		
J1-7	J4-13	28 V PLB RTN	> 100k		
J1-9	J1-10	+28 V TMB	> 100k		
J1-9	J1-24	+28 V TMB	> 100k		
J1-9	J1-25	+28 V TMB	> 100k		
J1-9	J2-3	+28 V TMB	> 100k		
J1-9	J4-12	+28 V TMB	> 100k		
J1-9	J4-13	+28 V TMB	> 100k		
J1-10	J1-24	28 V TMB RTN	> 100k		
J1-10	J1-25	28 V TMB RTN	> 100k		
J1-10	J2-3	28 V TMB RTN	> 100k		
J1-10	J4-12	28 V TMB RTN	> 100k		
J1-10	J4-13	28 V TMB RTN	> 100k		
J1-24	J1-25	SAFETY HTR PWR	> 100k		
J1-24	J2-3	SAFETY HTR PWR	> 100k		
J1-24	J4-12	SAFETY HTR PWR	> 100k		
J1-24	J4-13	SAFETY HTR PWR	> 100k		
J1-25	J2-3	SAFETY HTR PWR RTN	> 100k		
J1-25	J4-12	SAFETY HTR PWR RTN	> 100k		
J1-25	J4-13	SAFETY HTR PWR RTN	> 100k		
J2-3	J4-12	SIGNAL RTN	> 100k		
J2-3	J4-13	SIGNAL RTN	> 100k		
J4-12	J4-13	+10 V INTERFACE BUS	> 100k		

TEST DATA SHEET 1 (Sheet 8 of 9)
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J2-2	J4-13	DATA CLOCK (C1)	> 2k		
J2-5	J4-13	DIGITAL-A DATA OUT	> 2k		
J2-6	J4-13	DATA ENABLE (A1)	> 2k		
J2-7	J4-13	8 SEC SYNC PULSE	> 2k		
J3-1	J4-13	1.248 MHZ CLK	> 2k		
J3-2	J4-13	1.248 MHZ CLK RTN	> 2k		
J4-2	J4-13	MODULE PWR DISCONN	> 2k		
J4-3	J4-13	SURVIVAL HTR ON	> 2k		
J4-4	J4-13	MODULE TOTALLY OFF	> 2k		
J4-5	J4-13	SCANNER A1-2 ON/OFF	> 2k		
J4-6	J4-13	ANT AT COLD CAL POS	> 2k		
J4-7	J4-13	PLL SELECT	> 2k		
J4-8	J4-13	ANT AT NADIR POS	> 2k		
J4-9	J4-13	COLD CAL POS MSB (IN)	> 2k		
J4-14	J4-13	MODULE PWR CONN	> 2k		
J4-15	J4-13	SURVIVAL HTR OFF	> 2k		
J4-16	J4-13	SCANNER A1-1 ON/OFF	> 2k		
J4-17	J4-13	ANT AT WARM CAL POS	> 2k		
J4-18	J4-13	FULL SCAN	> 2k		
J4-19	J4-13	COLD CAL POS LSB (IN)	> 2k		
J5-2	J4-13	MODULE PWR IND	> 2k		
J5-3	J4-13	COLD CAL POS MSB (OUT)	> 2k		
J5-5	J4-13	SCANNER A1-2 ON/OFF	> 2k		
J5-6	J4-13	ANT IN COLD CAL POS	> 2k		
J5-7	J4-13	PLL PRI/RED	> 2k		
J5-9	J4-13	SURV HTR ON/OFF	> 2k		
J5-11	J4-13	COLD CAL POS LSB (OUT)	> 2k		
J5-12	J4-13	SCANNER A1-1 ON/OFF	> 2k		
J5-13	J4-13	ANT IN WARM CAL POS	> 2k		
J5-14	J4-13	ANT IN NADIR POS	> 2k		
J5-15	J4-13	FULL SCAN MODE	> 2k		

TEST DATA SHEET 1 (Sheet 9 of 9)
Grounding Interface Test (Paragraph 3.2.4.1)

Source Pin	Destination Pin	Source Pin Description	Required Resistance (Ohms)	Measured Value (Ohms)	Pass/Fail
J6-2	J1-10	RF SHELF A1-1 TEMP	> 2k		
J6-3	J1-10	A1-1 SCAN MTR.TEMP	> 2k		
J6-4	J1-10	WARM LOAD A1-1 TEMP	> 2k		
J6-6	J4-13	PLLO RED LOCK DETECT	> 2k		
J6-8	J4-13	A1-1 DRIVE MTR CVR	> 2k		
J6-9	J4-13	+15 VDC ANT DRIVE MON	> 2k		
J6-10	J4-13	+5 VDC ANT DRIVE MON	> 2k		
J6-11	J4-13	+15 VDC SIG PROC MON	> 2k		
J6-12	J4-13	+5VDC SIG PROC MON	> 2k		
J6-13	J4-13	L.O. VOLTAGE CH3 MON	> 2k		
J6-14	J4-13	L.O. VOLTAGE CH5 MON	> 2k		
J6-15	J4-13	L.O. VOLTAGE CH7 MON	> 2k		
J6-16	J4-13	+15 VDC PLL LO MON	> 2k		
J6-17	J4-13	+10 V MIXER/AMP MON	> 2k		
J6-18	J4-13	L.O. VOLTAGE CH15 MON	> 2k		
J6-21	J4-10	RF SHELF A1-2 TEMP	> 2k		
J6-22	J4-10	A1-2 SCAN MTR.TEMP	> 2k		
J6-23	J4-10	WARM LOAD A1-2 TEMP	> 2k		
J6-25	J4-13	PLLO PRI LOCK DETECT	> 2k		
J6-27	J4-13	A1-2 DRIVE MTR CURR	> 2k		
J6-28	J4-13	-15 VDC ANT DRIVE MON	> 2k		
J6-29	J4-13	-15 VDC SIG PROC MON	> 2k		
J6-30	J4-13	L.O. VOLTAGE CH4 MON	> 2k		
J6-31	J4-13	L.O. VOLTAGE CH6 MON	> 2k		
J6-32	J4-13	L.O. VOLTAGE CH8 MON	> 2k		
J6-33	J4-13	-15 VDC PLL LO MON	> 2k		
J6-34	J4-13	IF AMP MON	> 2k		

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 2
+28 MLB During Turn-on Transient (Paragraph 3.2.4.2.1.1)

At 28.56 Vdc:

Step	Parameter	Measured/ Calculated	Required*		Pass/ Fail
			S/N 101-104	S/N 105 & up	
7	Time to reach steady state current	_____ms	20 ms max	300 ms max	
8	Peak Current	_____Amps	10.6 Amps	5.9 Amps	
10	Rate of Change (Slope): dI/dT	_____mA/μs	677 mA/μs	250 mA/μs	

At 27.44 Vdc:

Step	Parameter	Measured/ Calculated	Required*		Pass/ Fail
			S/N 101-104	S/N 105 & up	
7	Time to reach steady state current	_____ms	20 ms max	300 ms max	
8	Peak Current	_____Amps	10.6 Amps	5.9 Amps	
10	Rate of Change (Slope): dI/dT	_____mA/μs	677 mA/μs	250 mA/μs	

At 28.00 Vdc:

Step	Parameter	Measured/ Calculated	Required*		Pass/ Fail
			S/N 101-104	S/N 105 & up	
7	Time to reach steady state current	_____ms	20 ms max	300 ms max	
8	Peak Current	_____Amps	10.6 Amps	5.9 Amps	
10	Rate of Change (Slope): dI/dT	_____mA/μs	677 mA/μs	250 mA/μs	

* Refer to Figure 5.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date

TEST DATA SHEET 3
+28V MLB Operating Power (Paragraph 3.2.4.2.1.2)

Step	+28V MLB at 27 Volts	Measured	Units	Required	Pass/Fail
2	+28 V MLB voltage at 27 V (V_b) (Measured)		Volts	27.0 ± 0.1	
3	Average Current (I_V) (PLO #1)		Amps	N/A	N/A
4	+28 V MLB bus power = $I_V \times V_b$ (PLO #1)		Watts	82 W max	

+28 V MLB at 28 Volts

59	+28 V MLB Bus Voltage at 28 V (V_b) (Measured)		Volts	28.0 ± 0.1	
610	Average Current (I_V) (PLO #1)		Amps	N/A	N/A
711	+28 V MLB Operating Power = $I_V \times V_b$ (PLO #1)		Watts	82 W max	

+28 V MLB at 29 Volts

816	+28 V MLB voltage at 29 V (V_b) (Measured)		Volts	29.0 ± 0.1	
917	Average Current (I_V) (PLO #1)		Amps	N/A	N/A
1018	+28 V MLB operating power = $I_V \times V_b$ (PLO #1)		Watts	82 W max	

6	AVERAGE CURRENT (I_V) (PLO #2)		AMPS	N/A	N/A
7	+28V MLB bus power = $I_V \times V_b$ (PLO #2)		Watts	82 W max	

13	AVERAGE CURRENT (I_V) (PLO #2)		AMPS	N/A	N/A
14	+28V MLB bus power = $I_V \times V_b$ (PLO #2)		Watts	82 W max	

20	Average Current (I_V) (PLO #2)		AMPS	N/A	N/A
21	+28V MLB bus power = $I_V \times V_b$ (PLO #2)		Watts	82 W max	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

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(Flight Hardware Only)

Quality Control _____ Date _____

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TEST DATA SHEET 4 (Sheet 1 of 2)
+28 Pulse Load Bus (Paragraph 3.2.4.2.2.1-3.2.4.2.2.5)



RAH Ratt
3/16/99

Paragraph	Parameter	Measured or Calculated	Required	Pass/ Fail
3.2.4.2.2.1	From -0.1 to two seconds			
	Peak Current = I_p	___Amps	1.3 amps max	
3.2.4.2.2.2	From 2 to 4 seconds			
	Peak Current = I_p	___Amps	1.3 amps max	
3.2.4.2.2.3	From 4 to 6 seconds			
	Peak Current = I_p	___Amps	1.3 amps max	
3.2.4.2.2.4	From 6 to 8 seconds			
	Peak Current = I_p	___Amps	1.3 amps max	
3.2.4.2.2.5	Eight Sec. Integrated Current Measurement:			
	Current	___mA	None	
3.2.4.2.2.6	Turn-on Transient:			
	dI/dT	___mA/ μ s	744 mA/ μ s *	
	Peak Current = I_p	___Amps	11.5 Amps	

* Refer to Figure 9.

Bus current during the I/H, D period

Paragraph	Parameter	Measured or Calculated	Pass/ Fail
3.2.4.2.2.1	From -0.1 to 2 secs	mA	N/A
3.2.4.2.2.2	From 2 to 4 secs	mA	N/A
3.2.4.2.2.3	From 4 to 6 secs	mA	N/A
3.2.4.2.2.5	From 6 to 8 secs	mA	N/A

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date

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(Flight Hardware Only)

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TEST DATA SHEET 4 (Sheet 2 of 2)
+28 Pulse Load Bus (Paragraph 3.2.4.2.2.6) 7



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Bus current during warm cal, cold cal & Nadir

Paragraph	Parameter	Measured or Calculated	Pass/ Fail
7			
3.2.4.2.2.6(2)	Warm cal	mA	N/A
3.2.4.2.2.6(3)	Cold cal	mA	N/A
3.2.4.2.2.6(4)	Nadir	mA	N/A
3.2.4.2.2.7(5)	WARM CAL (MOTORS OFF)	MA	N/A



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Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

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Date

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(Flight Hardware Only)

Date

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Date

TEST DATA SHEET 5
+28 V Analog Telemetry Bus (Paragraph 3.2.4.2.3)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
3	+28 V ATB Bus Voltage (V_{at}) (Measured)	____ Volts	28.0 \pm 0.5	
4	Av. Current (I_a)	____ mA	7 mA max	
5	+28 V ATB Operating Power = $I_a \times V_{at}$	____ mW	200 mW max	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date

TEST DATA SHEET 6

+10 V Interface Bus Voltage (Paragraph 3.2.4.2.4)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
3	Av. Current (I_a)	____ mA	10 mA max	
3	+10 V Interface Bus (V_{ib}) (Measured)	____ Volts	9.0 \pm 1.0 V	
4	+10 V Interface Bus Power = $I_a \times V_{ib}$	____ mW	100 mW max	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer
Date

Customer Representative (Flight Hardware Only)	Date
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Quality Control
Date

TEST DATA SHEET 7
Power Input Test for LPT (Paragraph 3.2.4.2.5)

Step	Parameter	Measured	Units	Required	Pass/ Fail
3	+28 V MLB Voltage (Vb) (Measured at connector J1)		Volts	28 ±0.5	
3	Current		Amps	Between 0.5 and 4.3 Amps	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date

1.248 MHz Clock Signal Verification (Paragraph 3.2.4.3.2.1)



Date _____

TEST DATA SHEET 9
"C1" Shift Pulse Verification (Paragraph 3.2.4.3.2.2)

"C1" SHIFT PULSE
Attach Photograph OR Plot Here

Parameter	Measured/ Calculated	Required	Pass/ Fail
Pulse Timing (A) *	___ μ s	48 μ s \pm 10%	
Pulse Timing (B) *	___ μ s	12 μ s \pm 10%	
Pulse Amplitude	___Volts	9.0 \pm 1.0 V	

* Refer to Figure 13 for location of the pulse timing A and B.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date

TEST DATA SHEET 10
"A1" Select Pulse Verification (Paragraph 3.2.4.3.2.3)

"A1" SELECT PULSE
Attach Photograph or Plot Here

Parameter	Measured/ Calculated	Required	Pass/ Fail
Select Pulse Timing (F) *	____ μ s	961.5 μ s \pm 10%	
Select Pulse Amplitude	____ Volts	9.0 \pm 1.0 V	

* Refer to Figure 13 for location of the pulse timing F

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date

TEST DATA SHEET 11
"8 Seconds" Frame Sync Pulse (Paragraph 3.2.4.3.2.4)

"8 SECONDS" FRAME SYNC PULSE
Attach Photograph or Plot Here
(Record of "C" timing only is required)

Step	Parameter	Measured/ Calculated	Required	Pass/ Fail
1*	Frame Sync Pulse Timing (G)*	___ Sec	8 Sec $\pm 10\%$	
	Frame Sync Pulse Timing (C)*	___ μ s	240.4 μ s $\pm 10\%$	
	Frame Sync Pulse Amplitude	___ Volts	9.0 ± 1.0 V	

* Refer to Figure 13 for location of the timing pulses for G and C.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date

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TEST DATA SHEET 12 (Sheet 1 of 2)
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the 8 seconds Frame sync pulse.

ATTACH PHOTOGRAPH OR PLOT HERE

Verify that the sync pulse between H and C is as shown in Figure 19.

TIME MEASURED: _____

TIME REQUIRED: 1.2 ms \pm 10%

PASS/FAIL _____

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 12 (Sheet 2 of 2)
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the C1 Shift pulse.

ATTACH PHOTOGRAPH OR PLOT HERE

Verify that the sync pulse between I and E is as shown in Figure 19.

TIME MEASURED: _____

TIME REQUIRED: 24 μ s \pm 1 μ s

PASS/FAIL _____

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

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TEST DATA SHEET 13
Synchronization Signals Relationship (Paragraph 3.2.4.3.2.5)

A1 Select pulse and the 1.248 MHz clock.

ATTACH PHOTOGRAPH OR PLOT HERE

Verify that the sync pulse between I and J is as shown in Figure 19.

PASS/FAIL _____

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 14

Commands and Digital-B Telemetry Verification (Paragraphs 3.2.4.3.3.1, 3.2.4.3.3.2, 3.2.4.3.3.3, and 3.2.4.3.3.4)

Test	Digital-B Commands Verification Via STE			Visual Inspection		Pass/Fail
	Command	Observed	Required	Observed	Required	
3.2.4.3.3.1 Module Totally Off	Scanner A1-1		OFF		Antenna pointing to warm load.	
	Scanner A1-2		OFF		Antenna pointing to warm load.	
	Module Power		Disconnect	N/A	N/A	
	Survival Htr. Power.		OFF		28 V supply current=0	
3.2.4.3.3.2 Survival Heater Power	Survival Heater ON		ON	N/A	N/A	
	Survival Heater OFF		OFF	N/A	N/A	
3.2.4.3.3.3 Module Power Connect	Module Power		Connect		+28 V DC current is between 0.5 and 3.2 amps.	
3.2.4.3.3.4 PLL Power	PLLO#2		PLLO#2	N/A	N/A	
	PLLO#1		PLLO#1	N/A	N/A	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

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10 Mar 99

TEST DATA SHEET 15
Scanner Commands Verification (Paragraph 3.2.4.3.3.5, Step 1)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power		CONNECT	
	2 Survival Heater		OFF	
	3 Scanner A1 Power		ON	
	4 Scanner A2 Power		ON	
	5 Antenna Warm Cal Pos.		NO	
	6 Antenna Cold Cal Pos.		NO	
	7 Antenna NADIR Position		NO	
	8 Antenna Full Scan		YES	
	9 PLL Power		PLL#1	
	10 Cold MSB		0	
	11 Cold LSB		0	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 17

Scanner Commands Verification (Paragraph 3.2.4.3.3.5, Step 3)

Test	Digital "B" Verification			Pass/Fail
	Command	Observed	Required	
Full Scan	1 Module Power		CONNECT	
	2 Survival Heater		OFF	
	3 Scanner A1 Power		ON	
	4 Scanner A2 Power		ON	
	5 Antenna Warm Cal Pos.		NO	
	6 Antenna Cold Cal Pos.		NO	
	7 Antenna NADIR Position		NO	
	8 Antenna Full Scan		YES	
	9 PLL Power		PLLO#1	
	10 Cold MSB		0	
	11 Cold LSB		0	

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative _____ Date _____
 (Flight Hardware Only)

Quality Control
Date

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TEST DATA SHEET 19
Digital-A Data Output Full Scan Mode Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.1)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital-B Data Byte 1		2	
	0006	Digital-B Data Byte 2		**	
	0007	Digital-B Data Byte 3		0	
	0008	Digital-B Data Byte 4		0	
* AMSU A1 Identification Words (data entered in decimal system)					
		Binary	Decimal		
AMSU-A1 S/N 101		00000001	1		
AMSU-A1 S/N 102		00000101	5		
AMSU-A1 S/N 103		00001001	9		
AMSU-A1 S/N 104		00001101	13		
AMSU-A1 S/N 105		00010001	17		
AMSU-A1 S/N 106		00010101	21		
AMSU-A1 S/N 107		00011001	25		
AMSU-A1 S/N 108		00011101	29		
AMSU-A1 S/N 109		00100001	33		
** Required value = 14 when PLLO #1 is active; and = 6 when PLLO #2 is active.					
Circle Test: CPT LPT					
METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: _____ S/N: _____					
				Test Systems Engineer	Date
Customer Representative (Flight Hardware Only)		Date	Quality Control	Date	

TEST DATA SHEET 20
Reflector Positions Section [IV] (Paragraph 3.2.4.3.4.1)

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0014				0016			
02	0048				0050			
03	0082				0084			
04	0116				0118			
05	0150				0152			
06	0184				0186			
07	0218				0220			
08	0252				0254			
09	0286				0288			
10	0320				0322			
11	0354				0356			
12	0388				0390			
13	0422				0424			
14	0456				0458			
15	0490				0492			
16	0524				0526			
17	0558				0560			
18	0592				0594			
19	0626				0628			
20	0660				0662			
21	0694				0696			
22	0728				0730			
23	0762				0764			
24	0796				0798			
25	0830				0832			
26	0864				0866			
27	0890				0900			
28	0932				0934			
29	0966				0968			
30	1000				1002			
CC	1034				1036			
WC	1186				1188			

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.

** Required range for instrument serial number from TDS 6 of AE-26002/1 ± 10 counts. Rewriting range on this data sheet is optional.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 21
Digital-A Data Output Radiometer Data Section [V] (Paragraph 3.2.4.3.4.1)

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
 ** Required = $16,500 \pm 4000$ counts.

METSAT/AMSU-A1 System P/N IS-1331720

S/N: _____

Date _____

Date _____

Date _____

TEST DATA SHEET 22 (Sheet 1 of 2)
Full Scan Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.1)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***		25 ± 15	
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

- * Value is from the STE printout sheets. Copying data to this sheet is optional.
 ** For S/N 101 through 104.
 *** For S/N 105 and up.

(Continued on Sheet 2)

TEST DATA SHEET 22 (Sheet 2 of 2)
Full Scan Mode Temperature Sensors Section [VI (Paragraph 3.2.4.3.4.1)]

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	

- * Value is from the STE printout sheets. Copying data to this sheet is optional.
- ** = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
(Flight Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 23
Digital-A Data Output Warm Cal Mode Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.2)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital-B Data Byte 1		4	
	0006	Digital-B Data Byte 2		14	
	0007	Digital-B Data Byte 3		0	
	0008	Digital-B Data Byte 4		0	

* AMSU A1 Identification Words
(data entered in decimal system)

	Binary	Decimal
AMSU-A1 S/N 101	00000001	1
AMSU-A1 S/N 102	00000101	5
AMSU-A1 S/N 103	00001001	9
AMSU-A1 S/N 104	00001101	13
AMSU-A1 S/N 105	00010001	17
AMSU-A1 S/N 106	00010101	21
AMSU-A1 S/N 107	00011001	25
AMSU-A1 S/N 108	00011101	29
AMSU-A1 S/N 109	00100001	33

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 24

TEST DATA SHEET 24

Reflector Position Warm Cal Mode Section [IV] and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2 and 3.2.4.3.4.4)

BP	A1-1 Reflector			
	Para No.	Position*	Required**	Pass/Fail
WC	3.2.4.3.4.2			
15	3.2.4.3.4.4			

WC = Warm Cal
15 = Nadir Position

BP	A1-2 Reflector			
	Para No.	Position*	Required**	Pass/Fail
WC	3.2.4.3.4.2			
15	3.2.4.3.4.4			

WC = Warm Cal
15 = Nadir Position

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
 ** Required range for instrument serial number from TDS 6 of AE-26002/1 ± 10 counts. Rewriting range on this data sheet is optional.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative _____ Date _____
 (Flight Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 25
Digital-A Data Output Warm Cal Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.2)

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038		0		1050		0	
WC	1190		0		1202		0	

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
 ** Required = 16,500 ± 4000 counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
 (Flight Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 26 (Sheet 1 of 2)
Warm Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***			
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

- * Value is from the STE printout sheets. Copying data to this sheet is optional.
 ** For S/N 101 through 104.
 *** For S/N 105 and up.

(Continued on Sheet 2)

TEST DATA SHEET 26 (Sheet 2 of 2)
Warm Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	

* Value is from the STE printout sheets. Copying data to this sheet is optional.
 ** = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative
(Flight Hardware Only) _____ Date _____

Quality Control _____ Date _____

TEST DATA SHEET 27
Digital-A Data Output Cold Cal Mode Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.3)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital-B Data Byte 1		8	
	0006	Digital-B Data Byte 2		14	
	0007	Digital-B Data Byte 3		0	
	0008	Digital-B Data Byte 4		0	

* AMSU A1 Identification Words
(data entered in decimal system)

	Binary	Decimal
AMSU-A1 S/N 101	00000001	1
AMSU-A1 S/N 102	00000101	5
AMSU-A1 S/N 103	00001001	9
AMSU-A1 S/N 104	00001101	13
AMSU-A1 S/N 105	00010001	17
AMSU-A1 S/N 106	00010101	21
AMSU-A1 S/N 107	00011001	25
AMSU-A1 S/N 108	00011101	29
AMSU-A1 S/N 109	00100001	33

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date

TEST DATA SHEET 28 (Sheet 1 of 2)

Reflector Position Warm Cal Mode Section [IV], Reflector Position Cold Cal Mode Section [IV], and Reflector Position Nadir Mode Section [IV] (Paragraphs 3.2.4.3.4.2, 3.2.4.3.4.3, and 3.2.4.3.4.4)

BP	A1-1 Reflector			
	Para No.	Position*	Required**	Pass/Fail
CC	3.2.4.3.4.3, Step 4			
	a.			
	b.			
	c.			
	d.			
CC = Cold Cal				
* Actual counts from computer printout. Rewriting counts on this data sheet is optional. ** Required range for instrument serial number from TDS 6 of AE-26002/1 ± 10 counts. Rewriting range on this data sheet is optional.				

3.2.4.3.4.3, Step 4 Substep	MSB	LSB
a.	0	0
b.	0	1
c.	1	0
d.	1	1

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date _____

**Customer Representative
(Flight Hardware Only)**

Date _____

Quality Control

Date _____

TEST DATA SHEET 28 (Sheet 2 of 2)

Reflector Position Warm Cal Mode Section [IV], Reflector Position Cold Cal Mode Section [IV], and Reflector Position Nadir Mode Section [IV (Paragraphs 3.2.4.3.4.2, 3.2.4.3.4.3, and 3.2.4.3.4.4)

BP	A1-2 Reflector			
	Para No.	Position*	Required**	Pass/Fail
CC	3.2.4.3.4.3, Step 4			
	a.			
	b.			
	c.			
	d.			

CC = Cold Cal

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
 ** Required range for instrument serial number from TDS 6 of AE-26002/1 ± 10 counts. Rewriting range on this data sheet is optional.

3.2.4.3.4.3, Step 4 Substep	MSB	LSB
a.	0	0
b.	0	1
c.	1	0
d.	1	1

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
(Flight Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 29

Digital-A Data Output Cold Cal Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.3)
Condition: Cold Cal Position MSB=0 and Cold Cal Position LSB=0

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Measured*	Required**	Pass/Fail	Element (For Ref)	Measured*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038				1050			
WC	1190				1202			

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
** Required = $16,500 \pm 4000$ counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
(Flight Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 30 (Sheet 1 of 2)
Cold Cal Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.3)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***			
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

- * Value is from the STE printout sheets. Copying data to this sheet is optional.
 ** For S/N 101 through 104.
 *** For S/N 105 and up.

(Continued on Sheet 2)

* Value is from the STE printout sheets. Copying data to this sheet is optional.
 ** = Count of 24,552 + 1765, -1308.

Quality Control _____ Date _____

TEST DATA SHEET 31

Digital-A Data Output Nadir Mode Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.4.4)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital-B Data Byte 1		16	
	0006	Digital-B Data Byte 2		14	
	0007	Digital-B Data Byte 3		0	
	0008	Digital-B Data Byte 4		0	

AMSU A1 Identification Words (data entered in decimal system)	Binary	Decimal
AMSU-A1 S/N 101	00000001	1
AMSU-A1 S/N 102	00000101	5
AMSU-A1 S/N 103	00001001	9
AMSU-A1 S/N 104	00001101	13
AMSU-A1 S/N 105	00010001	17
AMSU-A1 S/N 106	00010101	21
AMSU-A1 S/N 107	00011001	25
AMSU-A1 S/N 108	00011101	29
AMSU-A1 S/N 109	00100001	33

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative _____ Date _____
 (Flight Hardware Only)

Quality Control
Date

TEST DATA SHEET 32
Digital-A Data Output Nadir Mode Radiometer Data Section [V] (Paragraph 3.2.4.3.4.4)

BP	A1-2 Channel-3 (50.3 GHz)				A1-1 Channel-9 (57.290344 GHz)			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
01	0018				0030			
02	0052				0064			
03	0086				0098			
04	0120				0132			
05	0154				0166			
06	0188				0200			
07	0222				0234			
08	0256				0268			
09	0290				0302			
10	0324				0336			
11	0356				0370			
12	0392				0404			
13	0426				0438			
14	0460				0472			
15	0494				0506			
16	0528				0540			
17	0562				0574			
18	0596				0608			
19	0630				0642			
20	0664				0676			
21	0698				0710			
22	0732				0744			
23	0766				0778			
24	0800				0812			
25	0834				0846			
26	0868				0880			
27	0902				0914			
28	0936				0948			
29	0970				0982			
30	1004				1016			
CC	1038		0		1050		0	
WC	1190		0		1202		0	

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
 ** Required = $16,500 \pm 4000$ counts (Unless otherwise indicated).

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date

TEST DATA SHEET 33 (Sheet 1 of 2)
Nadir Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.4)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1		25 ± 15	
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***		25 ± 15	
1122	Mixer I.F. Amp. Channel 3		25 ± 15	
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

- * Value is from the STE printout sheets. Copying data to this sheet is optional.
 ** For S/N 101 through 104.
 *** For S/N 105 and up.

(Continued on Sheet 2)

TEST DATA SHEET 33 (Sheet 2 of 2)
Nadir Mode Temperature Sensors Section [VI] (Paragraph 3.2.4.3.4.4)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14		25 ± 15	
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		**	

* Value is from the STE printout sheets. Copying data to this sheet is optional.
** = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
(Flight Hardware Only)

Quality Control _____ Date _____

10 Mar 99

TEST DATA SHEET 34

Analog Telemetry Verification by Way of Connector J6 (Paragraph 3.2.4.3.5.1)

	From	Description	To	Measured (volts)	Required (volts)	Pass/Fail
03	J6-02	RF Shelf A1-1 Temp.	J1-10	_____	3.5 ± 2 V	_____
01	J6-03	A1-1 Scan Motor Temp.	J1-10	_____	3.5 ± 2 V	_____
05	J6-04	Warm Load A1-1 Temp.	J1-10	_____	3.5 ± 2 V	_____
04	J6-21	RF Shelf A1-2 Temp.	J1-10	_____	3.5 ± 2 V	_____
02	J6-22	A1-2 Scan Motor Temp.	J1-10	_____	3.5 ± 2 V	_____
06	J6-23	Warm Load A1-2 Temp.	J1-10	_____	3.5 ± 2 V	_____
25	J6-06	PLLO No. 2 Lock detect	J2-03	_____	***	_____
07	J6-08	A1-1 Drive Motor Curr.	J2-03	_____	3.5 ± 2 V	_____
10	J6-09	+15 V Antenna Drive	J2-03	_____	3.5 ± 2 V	_____
15	J6-10	+5 V Antenna Drive	J2-03	_____	3.5 ± 2 V	_____
09	J6-11	+15 V Signal Processing	J2-03	_____	3.5 ± 2 V	_____
14	J6-12	+5 V Signal Processing	J2-03	_____	3.5 ± 2 V	_____
22	J6-13	L.O. Voltage Channel 3	J2-03	_____	3.5 ± 2 V	_____
24	J6-14	L.O. Voltage Channel 5	J2-03	_____	3.5 ± 2 V	_____
20	J6-15	L.O. Voltage Channel 7	J2-03	_____	3.5 ± 2 V	_____
16	J6-16	+15 V PLL LO Ch 9-14	J2-03	_____	3.5 ± 2 V	_____
17	J6-17	*	J2-03	_____	3.5 ± 2 V	_____
27	J6-18	L.O. Voltage Channel 15	J2-03	_____	3.5 ± 2 V	_____
26	J6-25	PLLO No. 1 Lock detect	J2-03	_____	3.5 ± 2 V	_____
08	J6-27	A1-2 Drive Motor Curr.	J2-03	_____	***	_____
12	J6-28	-15 V Antenna Drive	J2-03	_____	3.5 ± 2 V	_____
11	J6-29	-15 V Signal Processing	J2-03	_____	3.5 ± 2 V	_____
23	J6-30	L.O. Voltage Channel 4	J2-03	_____	3.5 ± 2 V	_____
21	J6-31	L.O. Voltage Channel 6	J2-03	_____	3.5 ± 2 V	_____
19	J6-32	L.O. Voltage Channel 8	J2-03	_____	3.5 ± 2 V	_____
18	J6-33	-15 V PLL LO Ch 9-14	J2-03	_____	3.5 ± 2 V	_____
13	J6-34	**	J2-03	_____	3.5 ± 2 V	_____

* +8.5 V PLL LO Ch 9-14 for S/N 101-104, +10V Mixer Amp for S/N 105 and above.

** +8 V Receiver for S/N 101-104, +8 V IF Amp for S/N 105 and above.

*** 4.5 ± 0.5 when locked, 0.5 ± 0.5 when unlocked or OFF. One must be locked.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date

Customer Representative
(Flight Hardware Only)

Date

Quality Control

Date

TEST DATA SHEET 35 (Sheet 1 of 2)
Analog Telemetry Signals by Way of the STE (Paragraph 3.2.4.3.5.2)

	Description	(*)	Measured (Deg. C)	Required (Deg. C)	Pass/Fail
01	A1-1 Scanner Motor	Temp	_____	25 ± 15	_____
02	A1-2 Scanner Motor	Temp	_____	25 ± 15	_____
03	A1-1 RF Shelf	Temp	_____	25 ± 15	_____
04	A1-2 RF Shelf	Temp	_____	25 ± 15	_____
05	A1-1 Warm Load	Temp	_____	25 ± 15	_____
06	A1-2 Warm Load	Temp	_____	25 ± 15	_____
			(mAmps)	(mAmps)	
07	Ant A1-1 Drv Motor Current		_____	125 mA (Max)	_____
08	Ant A1-2 Drv Motor Current		_____	125 mA (Max)	_____

(*) Data from the printout sheet. Rewriting data on this space is optional.

(Continued on sheet 2)

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____
(Flight Hardware Only) Date _____

Quality Control _____ Date _____

TEST DATA SHEET 35 (Sheet 2 of 2)
Analog Telemetry Signals by Way of the STE (Paragraph 3.2.4.3.5.2)

	Description	(*)	Measured (volts)	Required (volts)	Pass/ Fail
09	Signal Processing	+15 V	_____	15.0 ± 0.5 V	_____
10	Antenna Drive	+15 V	_____	15.0 ± 0.5 V	_____
11	Signal Processing	-15 V	_____	-15.0 ± 0.5 V	_____
12	Antenna Drive	-15 V	_____	-15.0 ± 0.5 V	_____
13	Receiver	+8 V	_____	8.0 ± 0.5 V	_____
14	Sig Processing	+5 V	_____	5.0 ± 0.5 V	_____
15	Antenna Drive	+5 V	_____	5.0 ± 0.5 V	_____
16	Phase Lock Loop Ch 9-14 (a)/ Receiver/Mixer IF (b)	+8.5 V	_____	8.5 ± 0.5 V	_____
17	Phase Lock Loop Ch 9-14	+10 V	_____	10.0 ± 0.5 V	_____
18	Phase Lock Loop Ch 9-14	+15 V	_____	15.0 ± 0.5 V	_____
19	L.O. #8	-15 V	_____	-15.0 ± 0.5 V	_____
20	L.O. #7	Ch-8	_____	(**)__ ± 0.5 V	_____
21	L.O. #6	Ch-7	_____	(**)__ ± 0.5 V	_____
22	L.O. #3	Ch-6	_____	(**)__ ± 0.5 V	_____
23	L.O. #4	Ch-3	_____	(**)__ ± 0.5 V	_____
24	L.O. #5	Ch-4	_____	(**)__ ± 0.5 V	_____
25	PLLO No. 2 Lock Detect	Ch-5	_____	(**)__ ± 0.5 V	_____
26	PLLO No. 1 Lock Detect		_____	(***)	_____
27	L.O. #15	Ch-15	_____	(***)	_____
			_____	(**)__ ± 0.5 V	_____

(*) Data from the printout sheet. Rewriting data on this space is optional.

(**) GDO voltages from the manufacturer data sheet for S/N 101-104; DRO CH3-8 10V, GDO CH15 15V for S/N 105 and above.

(***) Locked PLO voltage 0 to +15 V, other PLO voltage ±15.0 V; one must be locked for S/N 101-104. Locked PLO voltage 4.0 ± 1.0 V, other PLO voltage 0.0 ± 0.2 V, one must be locked for S/N 105 and above.

(a) For S/N 101 through 104. (b) For S/N 105 and up.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date

Customer Representative

Date

Quality Control

Date

TEST DATA SHEET 36
Integrate/Hold and Dump Signal Verification (Paragraph 3.2.4.3.6.1)

ATTACH PHOTOGRAPH OR PLOT HERE

Parameter	Measured	Required	Pass/ Fail
Scope Channel-1: Integration/Hold			
Time Measured (A)*	ms	165 ms \pm 10%	
Time Measured (B)*	ms	35 ms \pm 10%	
Amplitude Measured	V	5.0 \pm 0.2 V	
Scope Channel-2: Dump Signal			
Time Measured (D)*	ms	9 ms to 15 ms	
Amplitude Measured	ms	5.0 \pm 0.2 V	

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date

TEST DATA SHEET 37
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

ATTACH PHOTOGRAPH OR PLOT HERE

Channel _____ 03
Frequency: _____ 50.3 GHz

INTEGRATION (X) *
Measured _____ ms
Required 165 ms \pm 10%
Pass/Fail _____

HOLD (B-D) *
Measured _____ ms
Required 25 ms \pm 10%
Pass/Fail _____

DUMP (D) *
Measured _____ ms
Required 9 ms to 15 ms
Pass/Fail _____

Channel _____ 04
Frequency: _____ 52.8 GHz

INTEGRATION (X) *
Measured _____ ms
Required 165 ms \pm 10%
Pass/Fail _____

HOLD (B-D) *
Measured _____ ms
Required 25 ms \pm 10%
Pass/Fail _____

DUMP (D) *
Measured _____ ms
Required 9 ms to 15 ms
Pass/Fail _____

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
(Flight Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 38
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel _____05
Frequency: _____53.596 GHz

INTEGRATION (X) *
Measured _____ms
Required 165 ms \pm 10%
Pass/Fail _____

HOLD (B-D) *
Measured _____ms
Required 25 ms \pm 10%
Pass/Fail _____

DUMP (D) *
Measured _____ms
Required 9 ms to 15 ms
Pass/Fail _____

ATTACH PHOTOGRAPH OR PLOT HERE

Channel _____06
Frequency: _____54.4 GHz

INTEGRATION (X) *
Measured _____ms
Required 165 ms \pm 10%
Pass/Fail _____

HOLD (B-D) *
Measured _____ms
Required 25 ms \pm 10%
Pass/Fail _____

DUMP (D) *
Measured _____ms
Required 9 ms to 15 ms
Pass/Fail _____

- Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720 Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
(Flight Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 39
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel _____07
Frequency: _____54.94 GHz

INTEGRATION (X) *
Measured _____ms
Required 165 ms \pm 10%
Pass/Fail _____

HOLD (B-D) *
Measured _____ms
Required 25 ms \pm 10%
Pass/Fail _____

DUMP (D) *
Measured _____ms
Required 9 ms to 15 ms
Pass/Fail _____

Channel _____08
Frequency: _____55.5 GHz

INTEGRATION (X) *
Measured _____ms
Required 165 ms \pm 10%
Pass/Fail _____

HOLD (B-D) *
Measured _____ms
Required 25 ms \pm 10%
Pass/Fail _____

DUMP (D) *
Measured _____ms
Required 9 ms to 15 ms
Pass/Fail _____

ATTACH PHOTOGRAPH OR PLOT HERE

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
(Flight Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 40
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 09
Frequency: 57.2903 GHz

INTEGRATION (X) *
Measured ms
Required 165 ms \pm 10%
Pass/Fail

HOLD (B-D) *
Measured ms
Required 25 ms \pm 10%
Pass/Fail

DUMP (D) *
Measured ms
Required 9 ms to 15 ms
Pass/Fail

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 10
Frequency: 57.2903 GHz

INTEGRATION (X) *
Measured ms
Required 165 ms \pm 10%
Pass/Fail

HOLD (B-D) *
Measured ms
Required 25 ms \pm 10%
Pass/Fail

DUMP (D) *
Measured ms
Required 9 ms to 15 ms
Pass/Fail

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: S/N:

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date

TEST DATA SHEET 41
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

DUMP (D) *
Measured _____ms
Required 9 ms to 15 ms
Pass/Fail _____

Circle Test: CPT LPT

Shop Order: _____ S/N: _____

Quality Control _____ Date _____

TEST DATA SHEET 42
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel _____ 13
Frequency: _____ 57.3903 GHz

INTEGRATION (X) *
Measured _____ ms
Required 165 ms \pm 10%
Pass/Fail _____

HOLD (B-D) *
Measured _____ ms
Required 25 ms \pm 10%
Pass/Fail _____

DUMP (D) *
Measured _____ ms
Required 9 ms to 15 ms
Pass/Fail _____

ATTACH PHOTOGRAPH OR PLOT HERE

Channel _____ 14
Frequency: _____ 57.3903 GHz

INTEGRATION (X) *
Measured _____ ms
Required 165 ms \pm 10%
Pass/Fail _____

HOLD (B-D) *
Measured _____ ms
Required 25 ms \pm 10%
Pass/Fail _____

DUMP (D) *
Measured _____ ms
Required 9 ms to 15 ms
Pass/Fail _____

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
(Flight Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 43

TEST DATA SHEET 43
Integration Time (Analog Output) Verification (Paragraph 3.2.4.3.6.2)

ATTACH PHOTOGRAPH OR PLOT HERE

Channel 15

Frequency: _____ 89 GHz

INTEGRATION (X) *

Measured _____ ms
Required 165

Required 165 ms \pm 10%

Pass/Fail _____

HOLD (B-D) *

Measured _____ ms

Required 25 ms \pm 10%

Pass/Fail _____

DUMP (D) *

Measured _____ ms

Required 9 ms to 15 ms

Pass/Fail _____

* Refer to Figure 2 for waveform configuration.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer

Date _____

**Customer Representative
(Flight Hardware Only)**

Date _____

Quality Control

Date _____

TEST DATA SHEET 44
PLLO No. 1 Verification (Paragraph 3.2.4.3.6.3)
PLLO No. 2 Verification (Paragraph 3.2.4.3.6.4)

PLLO NO. 1
PLLO No. 1 dc Level _____ Required: * Pass/Fail _____

PLLO NO. 2
PLLO No. 2 dc Level _____ Required: * Pass/Fail _____

* -15 to +15 V dc level for S/N 101 - S/N 104, 4.0 ± 1.0 V for S/N 105 and above.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative
(Flight Hardware Only) _____ Date _____

Quality Control _____ Date _____

TEST DATA SHEET 45
Digital-A/GSE Mode-1 Synch Sequence,
Unit I.D./Serial Number and Digital-B Serial Data Verification
Sections [I], [II], and [III] (Paragraph 3.2.4.3.7.2)

Step	Element (For Ref)	Description	Recorded Value	Required Value	Pass/Fail
[I]	0001	Sync Sequence Byte 1		255	
	0002	Sync Sequence Byte 2		255	
	0003	Sync Sequence Byte 3		255	
[II]	0004	Unit I.D. and Serial N		*	
[III]	0005	Digital-B Data Byte 1		0	
	0006	Digital-B Data Byte 2		14	
	0007	Digital-B Data Byte 3		0	
	0008	Digital-B Data Byte 4		0	

* AMSU A1 Identification

* AMSU A1 Identification Words
(data entered in decimal system)

(data entered in decimal system)		
	Binary	Decimal
AMSU-A1 S/N 101	00000001	1
AMSU-A1 S/N 102	00000101	5
AMSU-A1 S/N 103	00001001	9
AMSU-A1 S/N 104	00001101	13
AMSU-A1 S/N 105	00010001	17
AMSU-A1 S/N 106	00010101	21
AMSU-A1 S/N 107	00011001	25
AMSU-A1 S/N 108	00011101	29
AMSU-A1 S/N 109	00100001	33

Circle Test: CPT IPT

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative
(Flight Hardware Only) _____ Date _____

Quality Control _____ Date _____

TEST DATA SHEET 46 (Sheet 1 of 2)
Reflector Position (Paragraphs 3.2.4.3.7.2 - 3.2.4.3.7.7)

3.2.4.3.7.2 Digital-A/GSE Mode-1 Reflector Position Section [IV] ***

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
06	0184				0186			
CC	354				356			
WC	694				696			

3.2.4.3.7.3 Digital-A/GSE Mode-2 Reflector Position Section [IV] ***

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
01	0014				0016			

3.2.4.3.7.4 Digital-A/GSE Mode-3 Reflector Position Section [IV] ***

A1-1 Reflector			A1-2 Reflector		
Observed	Required**	Pass/Fail	Observed	Required**	Pass/Fail
	****			****	

- * Actual counts from computer printout. Rewriting counts on this data sheet is optional.
 ** Required range for instrument serial number from TDS 6 of AE-26002/1 ± 10 counts. Rewriting range on this data sheet is optional.
 *** GSE Modes do not require verification or testing for PFM & FM modules
 **** Observe that both A1-1 and A1-2 reflectors increment one step every 8 seconds.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Customer Representative
(Flight Hardware Only)

Date

Test Systems Engineer

Date

Quality Control

Date

TEST DATA SHEET 46 (Sheet 2 of 2)
Reflector Position (Paragraphs 3.2.4.3.7.2 - 3.2.4.3.7.7)

3.2.4.3.7.5 Digital-A/GSE Mode-4 Reflector Position Section [IV] ***

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
30	1000				1002			

3.2.4.3.7.6 Digital-A/GSE Mode-5 Reflector Position Section [IV] ***

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
06	0184				0186			

3.2.4.3.7.7 Digital-A/GSE Mode-7 Reflector Position Section [IV] ***

BP	A1-1 Reflector				A1-2 Reflector			
	Element (For Ref)	Position*	Required**	Pass/Fail	Element (For Ref)	Position*	Required**	Pass/Fail
06	0184				0186			

- * Actual counts from computer printout. Rewriting counts on this data sheet is optional.
 ** Required range for instrument serial number from TDS 6 of AE-26002/1 ± 10 counts. Rewriting range on this data sheet is optional.
 *** GSE Modes do not require verification or testing for PFM & FM modules

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
(Flight Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 47
Digital-A/GSE Mode-1 Radiometer Data Section [V] (Paragraph 3.2.4.3.7.2)

BP	A1-1 Reflector			A1-2 Reflector		
	Channel-3*	Required**	Pass/Fail	Channel-9*	Required**	Pass/Fail
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

* Actual counts from computer printout. Rewriting counts on this data sheet is optional.
 ** Required = 16,500 ± 4000 counts.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Customer Representative
(Flight Hardware Only) _____ Date _____

Test Systems Engineer _____ Date _____

Quality Control _____ Date _____

TEST DATA SHEET 48 (Sheet 1 of 2)
Digital-A/GSE Mode-1 Temperature Sensors Section [VI] (Paragraph 3.2.4.3.7.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1090	A1-1 Warm Load 1			
1092	A1-1 Warm Load 2		25 ± 15	
1094	A1-1 Warm Load 3		25 ± 15	
1096	A1-1 Warm Load 4		25 ± 15	
1098	A1-1 Warm Load Center		25 ± 15	
1100	A1-2 Warm Load 1		25 ± 15	
1102	A1-2 Warm Load 2		25 ± 15	
1104	A1-2 Warm Load 3		25 ± 15	
1106	A1-2 Warm Load 4		25 ± 15	
1108	A1-2 Warm Load Center		25 ± 15	
1110	Local Oscillator Channel 7		25 ± 15	
1112	Local Oscillator Channel 8		25 ± 15	
1114	Local Oscillator Channel 15		25 ± 15	
1116	PLL LO #2 Channels 9-14		25 ± 15	
1118	PLL LO #1 Channels 9-14		25 ± 15	
1120	PLLO (Reference Oscillator)**/ Not used ***		25 ± 15	
1122	Mixer I.F. Amp. Channel 3			
1124	Mixer I.F. Amp. Channel 4		25 ± 15	
1126	Mixer I.F. Amp. Channel 5		25 ± 15	
1128	Mixer I.F. Amp. Channel 6		25 ± 15	
1130	Mixer I.F. Amp. Channel 7		25 ± 15	
1132	Mixer I.F. Amp. Channel 8		25 ± 15	
1134	Mixer I.F. Amp. Channels 9-14		25 ± 15	
1136	Mixer I.F. Amp. Channel 15		25 ± 15	

- * Value is from the STE printout sheets. Copying data to this sheet is optional.
 ** For S/N 101 through 104.
 *** For S/N 105 and up.

(Continued on Sheet 2)

TEST DATA SHEET 48 (Sheet 2 of 2)
Digital-A/GSE Mode-1 Temperature Sensors Section [VI] (Paragraph 3.2.4.3.7.2)

Thermistor Sensors		Recorded Value* (deg. C)	Required Value (deg. C)	Pass/ Fail
Element	Description			
1138	I.F. Amp. Channel 11-14			
1140	I.F. Amp. Channel 9		25 ± 15	
1142	I.F. Amp. Channel 10		25 ± 15	
1144	I.F. Amp. Channel 11		25 ± 15	
1146	DC/DC Converter		25 ± 15	
1148	I.F. Amp. Channel 13		25 ± 15	
1150	I.F. Amp. Channel 14		25 ± 15	
1152	I.F. Amp. Channel 12		25 ± 15	
1154	RF Shelf A1-1		25 ± 15	
1156	RF Shelf A1-2		25 ± 15	
1158	Detector Preamp Assy.		25 ± 15	
1160	Scan Motor A1-1		25 ± 15	
1162	Scan Motor A1-2		25 ± 15	
1164	Feed Horn A1-1		25 ± 15	
1166	Feed Horn A1-2		25 ± 15	
1168	R.F. Mux A1-1		25 ± 15	
1170	R.F. Mux A1-2		25 ± 15	
1172	Local Oscillator Channel 3		25 ± 15	
1174	Local Oscillator Channel 4		25 ± 15	
1176	Local Oscillator Channel 5		25 ± 15	
1178	Local Oscillator Channel 6		25 ± 15	
1180	Temp Sensor Ref Voltage Count		25 ± 15	
			**	

- * Value is from the STE printout sheets. Copying data to this sheet is optional.
- ** = Count of 24,552 +1765,-1308.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Customer Representative
(Flight Hardware Only)

Date

Test Systems Engineer

Date

Quality Control

Date

Receiver Input Signals (Paragraph 3.2.4.4.1)

CH 9 through 14 PLLO	PRT Temp (°C)		Measured * Frequency	Requirements **	Pass/ Fail
PLLO No. 1	PLO No. 1	Xtal *** Osc.			
				57290.334 MHz ± 50 kHz	
PLLO No. 2	PLO No. 2	Xtal *** Osc.			
				57290.334 MHz ± 50 kHz	

* Attach spectrum analyzer plots.
 ** - At 18°C

* Attach spectrum analyzer plots.

** = At 18°C

*** PRT not connected on S/N 105 and above.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative _____ Date _____
(Flight Hardware Only)

Quality Control Date

Channel Number>	3	4	5	6
NEAT (Average of 5 data)	_____	_____	_____	_____
Pass/Fail	_____	_____	_____	_____
NEAT (Specified) K **	0.40	0.25	0.25	0.25
Channel Number>	7	8	9	10
NEAT (Average of 5 data)	_____	_____	_____	_____
Pass/Fail	_____	_____	_____	_____
NEAT (Specified) K **	0.25	0.25	0.25	0.40
Channel Number>	11	12	13	14
NEAT (Average of 5 data)	_____	_____	_____	_____
Pass/Fail	_____	_____	_____	_____
NEAT (Specified) K **	0.40	0.60	0.80	1.20
Channel Number>	15			
NEAT (Average of 5 data)	_____			
Pass/Fail	_____			
NEAT (Specified) K **	0.50			

A-59

TEST DATA SHEET 50 (Sheet 2 of 2)
Radiometer "Relative" NEΔT Verification* (Paragraph 3.2.4.4.2.2)

PLLO No. 2 (Channels 9 through 14)

Channel Number>	9	10	11	12
NEAT (Average of 5 data)				
Pass/Fail				
NEAT (Specified) K **				
	0.25	0.40	0.40	0.60

Channel Number>	13	14	
NEAT (Average of 5 data)			
Pass/Fail			
NEAT (Specified) K **			
	0.80	1.20	

* Baseline data for acceptance tests. Use first CBR.

- Baseline data for acceptance tests. Use first CPT or first LPT data along with specification value for pass/fail criteria
- For reference only

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative
(Flight Hardware Only) _____ Date _____

Quality Control _____ Date _____

TEST DATA SHEET 51 (Sheet 1 of 2)
Transient Susceptibility Test (Paragraph 3.2.4.2.1.4, 3.2.4.2.2.9, 3.2.4.2.3.3)

Test Setup Verified: _____
Signature

3.2.4.2.1.4: +28V Main Bus Load-Induced Transient Test

Subpara	Step	Load Induced Transient	Functional Performance Results/Deviations	Comments/Observations
3.2.4.2.1.4.2	8	Low frequency in accordance with Figure 8		
3.2.4.2.1.4.3	10	High frequency 1.43 Hz 200 mV p-p		
3.2.4.2.1.4.3	10	High frequency 2.86 Hz 1.00 V p-p		
3.2.4.2.1.4.3	10	High frequency 6.67 Hz 1.50 V p-p		

NOTE: Attach all backup data generated during the test (photos, printouts, plots, test logs, additional comments or observations, etc.) to this data sheet.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative
(Flight Hardware Only) Date

Quality Control Date

TEST DATA SHEET 51 (Sheet 2 of 2)
Transient Susceptibility Test (Paragraph 3.2.4.2.1.4, 3.2.4.2.2.9, 3.2.4.2.3.3)

Test Setup Verified: _____
Signature

3.2.4.2.2.9: +28V Pulse Load Bus Load-Induced Transient Test

Subpara	Step	Load Induced Transient	Functional Performance Results/Deviations	Comments/Observations
3.2.4.2.2.9.2	8	Low frequency in accordance with Figure 13		
3.2.4.2.2.9.3	10	High frequency 1.43 Hz 200 mV p-p		
3.2.4.2.2.9.3	10	High frequency 2.86 Hz 1.00 V p-p		
3.2.4.2.2.9.3	10	High frequency 6.67 Hz 1.50 V p-p		

3.2.4.2.3.3: +28V Analog Telemetry Bus Load-Induced Transient Test

Subpara	Step	Load Induced Transient	Functional Performance Results/Deviations	Comments/Observations
3.2.4.2.3.3.2	8	Low frequency in accordance with Figure 16		
3.2.4.2.3.3.3	10	High frequency 1.43 Hz 200 mV p-p		
3.2.4.2.3.3.3	10	High frequency 2.86 Hz 1.00 V p-p		
3.2.4.2.3.3.3	10	High frequency 6.67 Hz 1.50 V p-p		

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date _____

Customer Representative _____ Date _____
(Light Hardware Only)

Quality Control _____ Date _____

TEST DATA SHEET 52 (Sheet 1 of 2)
Instrument Feedback Tests (Paragraph 3.2.4.2.1.3, 3.2.4.2.2.8, 3.2.4.2.3.2, 3.2.4.2.4.2)

3.2.4.2.1.3: +28V Main Bus Instrument Feedback Tests

Subpara	Step	Test Type	Required	Measured Ripple (Peak-to-Peak) In mA	Pass/Fail
3.2.4.2.1.3.1	7	Load current ripple	<150 mA p-p	Value: _____	

NOTE: Attach all backup data generated during the test (photos, printouts, plots, test logs, additional comments or observations, etc.) to this data sheet.

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer Date

Customer Representative Date
(Flight Hardware Only)

Quality Control Date



TEST DATA SHEET 53
Channel Identification Test (Paragraph 3.2.4.5)

Channel Number	Antenna Location	Sweeper Freq. Setting (GHz)	Polarization (H/V)	Radiometric Data Counts Δ Counts	Channel Verified (Yes/No)
3	A1-2	50.35	V		
4	A1-2	52.85	V		
5	A1-2	53.70	H		
6	A1-1	54.45	H		
7	A1-1	54.99	V		
8	A1-2	55.55	H		
9	A1-1	57.34	H		
10	A1-1	57.50	H		
11	A1-1	57.564	H		
12	A1-1	57.59	H		
13	A1-1	57.602	H		
14	A1-1	57.608	H		
15	A1-1	89.55	V		

Circle Test: CPT LPT

METSAT/AMSU-A1 System P/N IS-1331720

Shop Order: _____ S/N: _____

Test Systems Engineer _____ Date

Customer Representative _____ Date
(Flight Hardware Only)

Quality Control _____ Date

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1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE		3. REPORT TYPE AND DATES COVERED
4. TITLE AND SUBTITLE Integrated Advanced Microwave Sounding Unit-A (AMSU-A), Performance Verification Report			5. FUNDING NUMBERS NAS 5-32314	
6. AUTHOR(S) R. Platt				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Aerojet 1100 W. Hollyvale Azusa, CA 91702			8. PERFORMING ORGANIZATION REPORT NUMBER 11428 March 1999	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) NASA Goddard Space Flight Center Greenbelt, Maryland 20771			10. SPONSORING/MONITORING AGENCY REPORT NUMBER ---	
11. SUPPLEMENTARY NOTES ---				
12a. DISTRIBUTION/AVAILABILITY STATEMENT ---			12b. DISTRIBUTION CODE ---	
13. ABSTRACT (Maximum 200 words) This is the Performance Verification Report, Final Comprehensive Performance Test Report, P/N 1331720-2-TST, S/N 105/A1, for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A).				
14. SUBJECT TERMS EOS Microwave System			15. NUMBER OF PAGES	
			16. PRICE CODE ---	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT SAR	

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1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE March 1999	3. REPORT TYPE AND DATES COVERED Contractor Report	
4. TITLE AND SUBTITLE Integrated Advanced Microwave Sounding Unit-A (AMSU-A) Performance Verification Report			5. FUNDING NUMBERS NAS5-32314	
6. AUTHOR(S) R. Platt				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS (ES) Aerojet 1100 W. Hollyvale Azusa, CA 91702			8. PERFORMING ORGANIZATION REPORT NUMBER 11428 March 1999	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS (ES) National Aeronautics and Space Administration Washington, DC 20546-0001			10. SPONSORING / MONITORING AGENCY REPORT NUMBER NASA/CR-1999-209503	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Unclassified-Unlimited Subject Category:19 Report available from the NASA Center for AeroSpace Information, 7121 Standard Drive, Hanover, MD 21076-1320. (301) 621-0390.			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) This is the Performance Verification Report, Final Comprehensive Performance Test Report, P/N 1331720-2-TST, S/N 105/A1, for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A).				
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